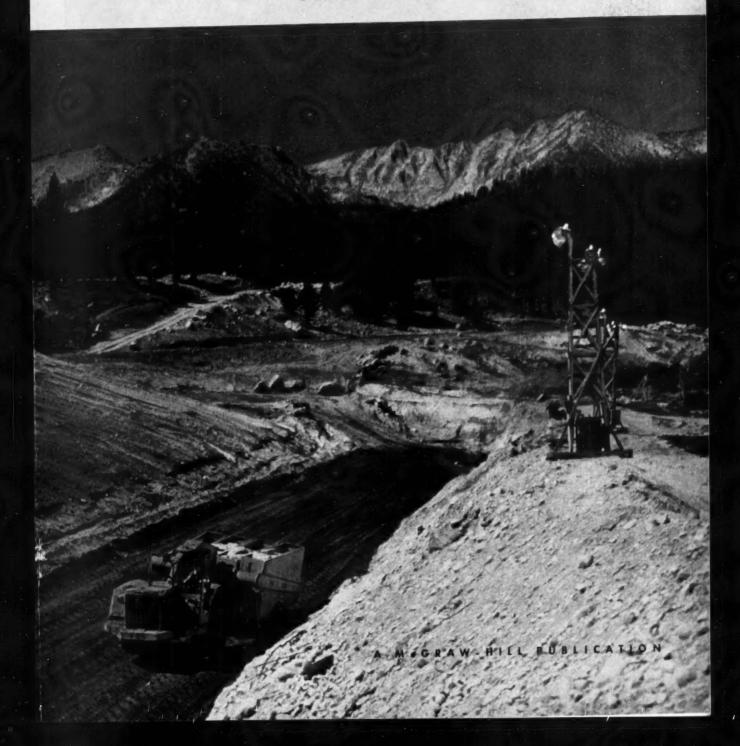
CONSTRUCTION

METHODS AND EQUIPMENT

March 1954



Shaves time from every working cycle



Le Roi Transo TLF-150 Front-end Loader

YOU move more material—faster—at lower cost — with this Le Roi Transo 1½-yard Front-End Loader. It saves you money every minute it's working — and here's why:

You load faster - because . . .

Patented "bucket-rocking action" helps you get a full bucket load within seconds, without tirespin or undue strain on the loader.

You travel faster - because . . .

Four-wheel drive and low center of gravity provide powerful traction. Torque converter transmits power fast and efficiently. You get in and out in a hurry — in sand, mud, snow, or rocky terrain. Planetary-type reversing transmission cuts reversing time 95%.

You can maneuver the TLF-150 easier and in less space, thanks to power steering, short (84") wheelbase, short over-all length, and small turning radius. Low carrying position of bucket gives operator especially good vision and provides an extra margin of safety.

You dump faster - because . . .

14-foot maximum dumping height and 3-foot reach let you spot loads quickly with pin-point accuracy over high truck tail-gates, bins, hoppers.

Now, don't just take our word for all this. See a Le Roi Transo TLF-150 in action, see how it makes shorter work of your material-handling jobs—how it cuts time and costs. Have your nearby Le Roi distributor arrange a demonstration.

Write for latest bulletin.

TD-12

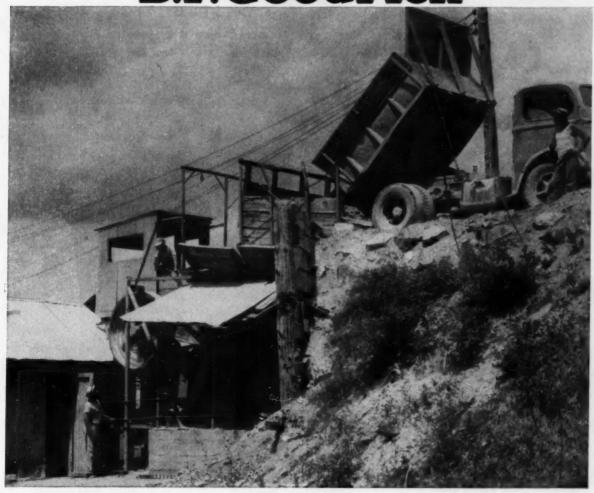


LE ROI COMPANY

Plants: Milwaukee • Cleveland — Greenwich — Dunkirk,
Ohio • Coldwater, Michigan

A Subsidiary of Westinghouse Air Brake Co. TRANSO DIVISION MILWAUKEE 14, WISCONSIN

RESEARCH KEEPS B.F. Goodrich FIRST IN RUBBER



Again! Longer life, greater savings with Grommet V belts

Rock company saves 3 ways with B. F. Goodrich V belts

Rocks by the truckload are dumped in that crusher, and reduced to the right size for highway construction. But the jolting action is rough on the V belts that run the crusher. Ordinary belts suffered from shock loads, wore out fast. Time outs for belt replacements brought the whole plant to a standstill.

When the company told a B. F. Goodrich man about the trouble, he recommended a switch to Grommet V belts. The belts you see here had been at work three years when the picture was taken without any shutdowns whatever for maintenance.

No wonder B. F. Goodrich Grommet belts outlast and outperform ordinary belts. In Grommet belts, all the load-carrying cords are concentrated in twin grommets. These grommets are cord loops made like giant twisted cables except that they're endless. Since there are no center cords, the Grommet belt is more flexible, and so can "give" temporarily and absorb shock loads. As a result, Grommet belts last 20 to 50% longer, depending on the service.

This company, like many others, is making a 3-way saving with Grommet V belts. First, they save on replacement costs because Grommet belts last longer. They save on production costs with no shutdowns caused by belt failures. And they save on maintenance costs because these belts need less attention. Yet the savings they make are clear profit because Grommet belts cost not one cent more than ordinary V belts. Next time you need V belts, order Grommet V belts from your BFG distributor. Or write The B. F. Goodrich Company, Dept. M-200, Akron 18, Ohio.

B.F. Goodrich



FOR A MOBILE

N MOST HEAVY CONSTRUCTION projects there are innumerable jobs of lifting or hoisting. Often it's imperative to get to the scene quickly. That's where a mobile tractor-mounted Carco winch pays off. For loading and unloading, lifting heavy machinery, pipe and fabricated steel, setting poles, and numerous other work, a Carco winch provides maneuverable lifting power. For a Carco winch, through its rugged, constant mesh gear train, efficiently takes the drawbar pull of the tractor and doubles it for hoisting or pulling. And the Carco winch line gives the added "reach" necessary to handle even an inaccessible load. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COM-PANY. Branches at Portland, Ore., and Franklin Park, Ill.



CONSTRUCTION

Volume 36 Number 3

METHODS

AND EQUIPMENT

Established 1919

March 1954

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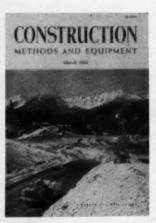
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On the Cover ...

Before a backdrop of towering ranges far up in the High Sierras of California, Bechtel Corp. placed 2,000,000 yd of fill in a 6-mo construction season for Southern California Edison Co.'s Vermillion Valley Dam. In foreground, 50-ton articulated Southwest rubber-tired compactor is towed by a Caterpillar DW21 tractor. Floodlights on skid-mounted towers kept the job going after dark.

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WIRE ROPE • SLINGS • ASSEMBLIES









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Manufacturers of Inter-nally Lubricated PREformed Wire Rope-Round-Braided and Flat-

Round-Braided and Flat-Braided Wire Rope Slings -Stainless Steel Wire Rope - Monel Metal Wire Rope - Aircraft Cable and Swaged Fittings-Safe-Lock Wire Rope Assemblies.

Mill Depots: New York, Pittsburgh, Chicago, St. Paul, Fort Worth, Portland, Seattle, San Francisco, Los Angeles, Distributors throughout U.S.A.

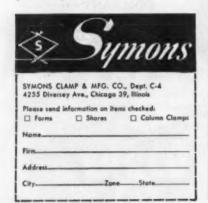


Only 3 Walers Used with Symons Forms On 16' High Wall

Henry Carlson Construction Company, Sioux Falls, South Dakota, used only 3 walers with Symons Forms on 16' high 12" thick wall for City Water Treatment Plant, Sioux Falls. 10,000 square feet of Symons Panels were reused 12 times on the job, resulting in considerable saving of labor, material and a fast forming schedule.

To make it easier to pour these high walls certain of the upper panels were, at regular intervals, raised 1 foot to permit pouring through side openings for the first 8 feet of concrete. This avoided dropping concrete from the top.

Send the plans for your next job and get complete layout and cost sheets—no obligation. Symons Forms, Shores and Column Clamps can be rented with purchase option. Paid rentals apply on purchase price.



Pay Dirt in This Issue

March, 1954

Bridge P	iers From Shells Assembled	d Under Water	62
	Work goes on 40 to 50 ft pier is supported on piles the mud-line. Concrete shell	below the surface, and each driven 140 to 150 ft below is ere precast on shore and after deep-water assembly.	
Formless	Paver Lays 24-Ft Concre	te Slab	82
	capacity mark another machin	full-width paving and high- ne developed by a contractor ion. Crawler-mounted, paver ore than 1,000 lin ft daily.	
Two Men	, One Boy Lay Ten-Mile Pla	astic Pipeline	58
	Lightweight, 3-in. pipe is in 5 days with only a few	joined and put into ditch hand tools. Pipe, in 20-ft y cemented plastic couplings.	
How to Ir	mprove Contractor-Labor R	elations	91
	Part 3 describes how jobs car supers who keep well infor- arrange for safety and comf	n be kept moving smoothly by med on labor practices and ort of men.	
Low-Cost	Repairs Save Deteriorating	g Piling	54
	Wood piles are cleaned, the jacket of concrete for excel	en provided with a uniform llent protection at low cost.	
Mechania	zed Slab Handling Cuts Ro	of Cost	56
1	Concrete slabs are delivered job and handled from car	in strapped bundles to the to roof by fork-lift truck.	
Tandem :	Saw Rig Cuts Pavement Joi	nts	116
		in concrete can be cut by rate of 12 ft in 75 sec.	
Concrete	Mixing and Placing		121
	Paver capacity governs spee-	d of laying highway and air- ust meet paver production.	
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	Bridge Floats	Construction Equipment News	
Crane Wo	rks on 40-Ploor Level 79	Methods Memo	Z3

NEXT MONTH California gets a big prestressed concrete building. Its the 338x232-ft Beef Exhibit Barn at Los Angeles. Read in the April issue how it was built complete in 49 working days.

PERFORMANCE PAYS OFF!



The tires you buy or specify can help keep you ahead of schedule—or drop you into a mess of dead equipment, idle men and busy red ink.

Goodyears are the best workers—the longest wearers—the tires *specifically designed* to thrive on your kind of jobs—to give you lower costs per hour.

It takes worlds of experience to build such tires—and Goodyear has it. Goodyear has built more tires for more specific purposes than anyone else on earth. So when you buy or specify Goodyears, you're buying the tires that can put more money in your pockets. Goodyear, Truck Tire Department, Akron 16, Ohio.

FOR EACH UOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

HARD ROCK LUG for stamina and full pull,

forward or reverse, on all kinds of tire-killing work.

HARD ROCK RIB

for front wheels on all tire-killing service. Rugged —smooth rolling—easy steering.

ROAD LUG

for toughness and supertraction OFF the road and long, smooth mileage ON the road.

America Needs Better, Safer Roads — Let's Bring them Up to PAR

Road Lug-T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

GOODFYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

We think you'll like THE GOODYEAR TELEVISION PLAYHOUSE-every other Sunday-NBC TV Network

"Euc" Scrapers belong in your profit picture



Struck capacities of 12 and 15.5 cubic yards

Euclid Scrapers have profit-making features that pay off in high production at low cost. Owners know from experience that they get more pay yards per hour with lower operating and maintenance cost, and that means low cost per yard.

They know, too, that "Euc" Scrapers have unequalled job availability because of their simple, rugged design and easy servicing. For example, there's no down time due to cable breakage because all scraper operations are lever actuated and independent . . . and the adjustable, longlife cutting blade with four identical and reversible sections assures peak production in all types of material from sand to sticky clay.

For performance and production data on work similar to yours, have your Euclid distributor provide helpful facts and figures on "Euc" Scrapers and see the new color movie, "Equation for Profit" that shows how "Eucs" can improve the profit picture on your earth moving work.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

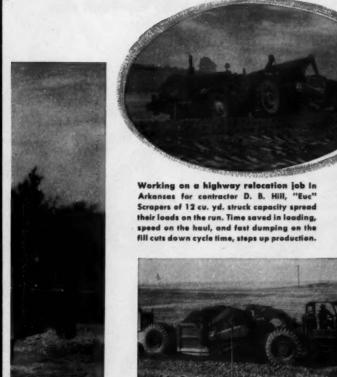


Euclid Equipment



FOR MOVING EARTH, ROCK, COAL AND ORE

Performance Pays Off in Low Cost Production



A floot of nine 15.5 yd. "Euc" Scrapers helped rush a big plant-site grading job in Kentucky to completion ahead of schedule. They maintained high hourly production because of their fast travel speed with heaped loads up to 21 cubic yards on hauls averaging 1,950 feet.

◀ Fast, easy loading with more pounds of payload. than other equipment of comparable size on many competitive demonstrations has made Euclid Scrapers the first choice of contractors and an important part of their profit picture.

High production with one man and one machine! Western Contracting Corp. found the Twin-Power Scraper a versatile machine for their work on the Ohio Turnpike. On one section, carrying average loads of 23 cu. yds., a complate 4700' cycle was made in only 5.3 minutes. Top extensions increased the struck capacity to 21 cu. yds.

Only Euclid builds a **Twin-Power Scraper**



Before you invest in any earth moving equipment, check with your Euclid distributor and be sure to see the new scraper film "Equation for Profit".

EUCLID DIVISION GENERAL MOTORS CORPORATION

Cleveland 17, Ohio

B.F.Goodrich



Super Traction tires pull through mud to help build a highway

THIS tractor scraper is at work on U.S. Highway 190 near Livonia, La. It is one of the units of W. R. Aldrich & Co., a Baton Rouge firm specializing in heavy construction projects. Plowing through the area's heavy, muddy soil under 20-ton loads could easily cause the scraper to bog down, tie up production, waste valuable time.

But the company avoids this trouble, uses B. F. Goodrich Super Traction tires—tires built to pull through such rough going faster, easier.

Thick, widely-spaced Super Traction cleats take a deep bite. Yet the entire tread contacts the soil, makes a big footprint for plenty of flotation. This B. F. Goodrich tire pulls without sinking, keeps you on top of the soil and on schedule.

Specially-compounded rubber in the Super Traction sidewall guards against cuts, resists cracking. And the patented B. F. Goodrich nylon shock shield protects the tire body from bruises.

Layers of strong nylon cords under the tread stretch together under impact to absorb and distribute shocks. You gain 4 ways: more hours of service, more recappable tires and longer service per recap, increased bruise resistance and less danger of tread separation. All these advantages, yet the nylon shock shield costs you nothing extra.

The Super Traction is just one of the complete B. F. Goodrich line of tires for every type of off-the-road service. See your B. F. Goodrich retailer. His address is listed under Tires in the Yellow Pages of your phone book. Or write The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.

Specify B. F. Goodrich tires when ordering new equipment



WAGARA UNDER GROUND

• 300 ft. below the City of Niagara one of the greatest tunnel jobs of all time is being completed. This is the huge Sir Adam Beck Niagara Power Project being built by the Hydro Electric Power Commission of Ontario, Canada.

Twin Tunnels, 5½ miles long will handle 15,000,000 gallons of water per minute. The excavation involves 9,923,000 tons of rock! The tunnels are being dug in five sections. Perini-Walsh, Ltd., began the carving out of the solid rock using Northwests for its removal. There were four Northwests on this part of the job—a Northwest at each of the headers the contractor is handling. These machines were lowered in sections through shafts and assembled in the cross cuts. Four Northwests are performing similar operations on the sections being handled by the Rayner-Atlas Co. of Niagara Falls, Ont. In addition to these, contractors are using six Northwests on the surface for a total of fourteen Northwests on the job.

Here again Northwests have proved themselves to be real Rock Shovels! Here again are two combinations of companies, each of whom has used Northwests for years, adding another endorsement to Northwest's performance record.

If you have a real Rock Shovel you never have to worry about output in any kind of digging. Follow the Northwest Crowd!

NORTHWEST ENGINEERING COMPANY 1503 Field Building, 135 South LaSalle Street, Chicago 3, Illinois PERINI-WALSH, Ltd.
RAYNER-ATLAS CO.
and the
ONTARIO HYDRO

NORTHWEST

SHOVELS • CRANES • DRAGLINES • PULLSHOVELS



It's Your Business.

Construction Set for Third Biggest Year

WITH A \$15 billion year entered on the books for the 53 weeks of 1953, engineering construction is setting its sights for \$14.4 billion in 1954, a standard 52-week year. This predicted set-back figures out at 3%. It is mainly accounted for in federal construction including earthwork and waterways, in housing both public and private, in industrial building and in unclassified, both public and private.

Strong gains are expected in these classes of heavy construction: state and municipal including highways, bridges, sewerage, public buildings and

private commercial buildings.

The backlog of proposed construction continues its healthy growth with new projects flowing in (\$16 billion worth in 1953) and \$7.5 billion advancing out of the backlog to contract status. Projects abandoned or superseded came out, too, for a total of \$3.3 billion. Thus the net rise in the backlog was \$5.3 billion to a total of \$74 billion at the close of the year. In January 1954 this climbed to \$75 billion, a powerful support for a continuing high rate of awarding future construction contracts.

Supplies Set Record

Supplies were the best on record for many construction materials. Cement shipment hit 261 million barrels, 4% more than the 1952 record. Fabricated structural steel was more plentiful than at any time in current memory, 3.118 million tons, a gain of 17% over 1952. Reinforcing steel topped 1.9 million tons, up 5%. Unglazed brick shipments totaled 5,720 million bricks, an increase of 2%. Douglas fir plywood shipments climbed 15% to 3,500 million sq ft on %-in. basis. Softwood lumber shipments, however, were down 1% to 29,796 million bf.

Equipment shipments through the third quarter ran 2% higher for excavating and earthmoving machines. Tracklaying tractors led this rise with a 28% gain over 1952. New orders are coming in satisfactorily especially for equipment that offers further operational cost saving to the contractor. But manufacturers' backlogs are down, and fast deliveries

are again the order of the day.

Construction workers increased 1% on construc-

Engineering Construction Expects Both Ups and Downs

\$14.4 billion in contract awards forecast for '54 is 3% under the '53 total

171 506 — 088 + 418 — 665 + 247 431 + 792 +	-26 \$6 -22 5 -69 1 -20 \$7 -5	5,335 1,200 -7,875 \$240 460	-3 +0.4 +7 -15 -7 -1 +9 +14
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247 431 +	+5 -37 -26 2	\$240 460 2,000	-1 +9 +14
431 	-37 -26 · 2	460	+9
431 	-37 -26 · 2	460	+9
792	-26 . 2	2,000 -	+14
134			+8
		700	10
374 -	-25	325 -	-12
			+4
	-39		-12
	8		-18
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	157 - 178 -	157 +35	157 +35 1,300 - 178 +15 2,700 -

tion other than building to an average of 496,000 per month in 1953. On buildings the number of workers averaged 2,046,000, down 1% from 1952.

Construction costs, up 2.9 to 4.6% since February 1953, are up only 0.13 to 0.33% since August. Lumber prices, however, are stiffening some but are still 13.2% below their 1950 Mount Everest. Wage rates are oozing up even before the down-to-business bargaining begins in March and April.

Bid Prices Move Down

Contractors bid prices have moved down against this uptrend. Prices bid in California state highway projects dropped 4.2% between the last quarters of 1952 and '53. The unit bid price index kept by the San Francisco District Corps of Engineers, covering bids on all types of work in states west of Denver, dropped 9.4% between the last halves of 1952 and 1953, pointing up a stiffening in competition.

Some Big Jobs of the Month

C. F. Braun & Co., 1100 S. Fremont St., Alhambra, Calif. Fluid hydroformer refining unit to produce high octane gasoline components at Baton Rouge, La. for Esso Standard Oil Co., North Baton Rouge, La., \$12,000,000.

Gull Contracting Co., 33-15 Lawrence St., Flushing, N. Y., New

York Land Section No. 2 for Third Tube of Lincoln Tunnel for the Port of New York Authority, 111 8th Ave., New York 11, N.Y., \$5,-817,490.

John McShain Inc., 17th & Spring Garden Sts., Philadelphia, two new buildings 8 and 10 stories high at

Temple University Medical Center, Broad, Park, Ontario and Tioga Sts., Philadelphia, for Temple University Hospital, Broad and Berks Sts., Philadelphia, \$6,647,000.

Diesel Construction Co., Inc., 260 Madison Ave., New York 16, (Continued on page 16)

"MAGIC-CARPET" MAKER

SPREADS

Material Evenly

COMPACTS

to Uniform Density

LEVELS

Automatically Without Forms



THE BARBER-GREENE TAMPING-LEVELING FINISHER

When the job calls for the highest quality bituminous surface, you'll do it best with the B-G Tamping-Leveling Finisher.

With this superbly designed machine, you are able to lay every type of mix — hot or cold — from clay stabilized gravel to hightype sheet asphalt. Whatever type mat you are laying, the B-G Finisher automatically measures the correct amount of compacted material — then simultaneously tamps, levels and strikes off to produce a ripple-free surface that is maintained under rolling and

traffic. Because the material is compacted while it is being laid, you are assured of a surface of uniform density. And with the B-G leveling principle you compensate even for abrupt changes in the subgrade.

It will pay you to investigate this unequalled, universally preferred method of paving streets, highways, runways, parking lots, tennis courts and similar jobs. You will learn, for example, how the B-G Finisher saves truck time, minimizes rolling and reduces the size of crew. Investigate today!

Barber-Greene



Aurora, Illinois, U.S.A.



HANDLING EASE . WEAR RESISTANCE

you get ALL three in Wallow Strange

In wire rope, it takes a balanced combination—of strength, flexibility and wear resistance—for longer, trouble-free service.

Yellow Strand has strength—from higher quality materials manufactured specifically for wire rope production. Yellow Strand has flexibility—from engineered design and precision care in construction. Yellow Strand has wear resistance—each wire, each strand is lubricated for internal protection.

In Yellow Strand you get all the qualities needed for long life and lower wire rope costs... and you get this big, money-saving bonus—

SPECIFY

Hellow Strand

FOR SAVINGS ... SAFETY ... SPEEDI-SERVICE

With Yellow Strand Speedi-Service, you can call your convenient Broderick & Bascom Distributor and tell him you need a certain line for a certain machine.

Skilled wire rope men check a file card on your equipment to determine length, size, grade and type of rope needed for the machine.

SPEEDI-SERVICE too!

The rope you need is taken from ample stocks controlled by the record cards. Your order is on its way to you in minutes instead of hours.

You cut machine down time, save costly manhours and records! You can start your Yellow Strand Speedi-Service Plan—without charge by calling your nearby Broderick & Bascom distributor or by writing to the address below.

BRODERICK & BASCOM ROPE CO.

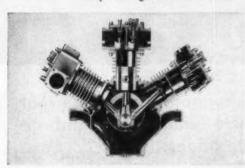
4203 Union Blvd., St. Louis 15, Mo.

How long since you checked your compressor's fuel consumption?

These figures will show you how Worthington Blue Brutes may save you as much as 1500 gallons of fuel during an average operating year

COMPRESSOR SIZE	ENGINE TYPE	GALLONS OF FUEL PER HOUR AT 80 PSI	GALLONS OF FUEL PER HOUR AT 100 PSI
60'	GASOLINE	1.31	1.42
105'	GASOLINE	2.16	2.35
102	DIESEL	1.65	1,73
160	GASOLINE	3.18	3.44
160'	DIESEL	2.45	2.60
2101	GASOLINE	4.32	4.70
210'	DIESEL	2.89	3.06
2151	GASOLINE	6.25	6.75
315'	DIESEL	4.36	3.64
600'	DIESEL	6.30	9.20

HOW DOES YOUR COMPRESSOR STACK UP in comparison with the Blue Brute for fuel economy? The figures shown have been determined under normal field operating conditions.



"SURE ARE EASY TO SERVICE." That's what we hear about Blue Brutes from mechanics all over the country No special tools or complicated disassembly procedures are needed. And compressor uses same oil as engine.



PLENTY OF RESERVE HORSEPOWER is standard with the Blue Brutes. It takes thousands of hours of normal operation before engine wear affects the compressor's output This means you get full-rated output even though the engine hasn't been in the shop for a long time.

Get the rest of the Blue Brute story from your nearest Worthington distributor. Or write to Worthington Corporation, Portable Compressor and Contractors' Tool Division, Section H.3.5, Holyoke, Mass.

WORTHINGTON

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

ROCK DRILLS . WAGON DRILLS . PAVERS . CONCRETE MIXERS . PORTABLE PUMPS

March 1954 — Construction METHODS and Equipment — Page 13



With new power and new chassis ruggedness, these great new Advance-Design trucks reduce hauling time and costs in big load, off-the-road operations.

On tough construction jobs—where the grades are steep, the loads are big and the going's tough—new heavy-duty Chevrolet trucks can cut your costs and speed up your schedules all down the line. They're packed with big new advantages you want and need!

NEW HIGH-COMPRESSION POWER

You get extra reserves of power to meet the heavy demands of construction hauling. The mighty, all-new "Jobmaster 261" engine* is the most powerful Chevrolet truck engine ever built! It delivers greatly increased acceleration

and hill-climbing ability—plus increased operating economy that pays off on the job.

NEW "STAND UP" STAMINA

These rugged new Chevrolet trucks have extra strength in chassis and drive line for longer, lower-cost life. For example, there are highercapacity clutches, stronger rear axles and more rigid frames in all heavy-duty models. Drop by your Chevrolet dealer's soon and

Drop by your Chevrolet dealer's soon and see the huskiest, "savingest" trucks in Chevrolet history!... Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET ADVANCE-DESIGN TRUCKS





New "Jobmaster 261" engine

Brings you more power throughout its entire speed range . . . reduces gear-shifting...increases operating economy.



New heavy-duty two-speed rear axles*

Available in two sets of gear ratios to provide maximum flexibility and efficiency on your particular hauling job.



MOST TRUSTWORTHY TRUCKS ON ANY JOB!

Plus all these Advance-Design truck features

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra-heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. HEAVY-DUTY SYNCHRO-MESH TRANSMISSION—DIAPHRAGM SPRING CLUTCH—HYPOID REAR AXLE—TWIN-ACTION REAR WHEEL BRAKES—DUAL-SHOE PARKING BRAKE—NEW RIDE CONTROL SEAT*—NEW, ROOMIER PICKUP, STAKE AND PLATFORM BODIES—NEW COMFORTMASTER CAB—PANORAMIC WINDSHIELD—BALL-GEAR STEERING—NEW ADVANCE-DESIGN STYLING.

*Optional at extra cost. Ride Control Seat is available on all cab models, "Johnaster 261" engine and two-speed rear axles on 2-ton models,

IT'S YOUR BUSINESS ...

Continued from page 10

building alterations, 625 Madison Ave., New York City, for 625 Madison Ave. Corp.; 80 Broad St., New York 4, N.Y. \$5,000,000.

V. N. Holderman & Sons, Inc., 890 Oakland Park Ave., Columbus, Ohio, concrete paving of 5.277 mi of U.S. Route No. 23, Ross County, Ohio, and construction of two bridges over Indian Creek for State Highway Dept., Ohio Depts. Building, Columbus 15, Ohio. \$1,791,929.

Brooklyn Engineering Corp., 1100 E. 25th St., Baltimore 18, Md. O'Donnell St., viaduct, beam spans over railroad tracks, balance concrete walls, earth fill, for Bureau of Highways, Baltimore, 303 Municipal Bldg., \$1,493,955.

Charles H. Tompkins Co., J. A. Jones Construction Co., and D. W. Winkelman Co., Jefferson Bldg., Syracuse, N.Y., excavation, grading, paving aprons, lighting, etc., \$9,089,190; T. C. Bateson Construction Co., Irwin-Kessler Bldg., Dallas, Tex., buildings and utilities,

\$8,705,448; and Fred Raff Co., 271 Sheldon St., Hartford, Conn., refueling facilities, \$1,127,970, for the Plattsburg Air Force Base, Plattsburg, N. Y., for the U.S. Engineers, 80 Lafayette St., New York City, grand total, \$18,922,608.

John H. Swanger, Inc., P. O. Box 1214, Lancaster, Pa., construct 21,-009 ft of reinforced concrete road, divided, variable in width, and deck plate girder bridge U.S. 1, Franklin Co., Pennsylvania for State Highway Dept., 506 N. Office Bldg., Harrisburg, Pa. \$1,122,147.

Wark & Co., 1920 Sansom St., Philadelphia, department store and parking area, Elkins Park, Pa. for Gimbel Bros., 9th & Market Sts., Philadelphia, \$7,000,000.

Blount Brothers Construction Co., Bell Bldg., Montgomery, Ala. construction facilities for Air University, Maxwell Air Force Base, Alabama, for U.S. Engineers, P. O. Box 1160, Mobile 7, Ala., \$5,341,-670

MacDonald Building Co., 1517 S. Tacoma Way, Tacoma, Wash., general contract for new State Office, Olympia, Wash., for State Capitol Comm., Olympia, Wash. \$1,773,908.

Traylor Bros., Upper Mt. Vernon Road, Evansville, Ind., substructure and Allied Structural Steel Co., 20 North Wacker Drive, Chicago, superstructure for toll bridge between Shawneetown, Ill. and Union Co., Ky., \$1,036,563 and \$2,693,864, respectively.

W. J. York, Cameron Village, Raleigh, N.C., Shopping Center, Clark St., and Route 20, Gary, Ind. for Tri-City Shopping Plaza, Gary, \$7,000,000.

McGraw Construction Co., Inc., 2 N. Main St., Middletown, Ohio, concrete, steel, masonry, steel sintering plant, Weirton, W. Va., for Weirton Steel Co., 1935 Stillwell St., Weirton, W. Va. \$6,420,000.

E. A. Meyer Construction Co., 1539 Morrow Ave., North Chicago, Ill., 4.75 mi concrete highway on U.S. 14, McHenry and Lake Counties, Illinois, for State Division of Highways, Springfield, \$1,325,351.

Fleming Co., 1717 Sansom St., Philadelphia, shopping center, Clifton Heights, Pa., for Oak Park Shopping Center c/o Morris A. Kravitz, Inc., 225 S. 15th St., Philadelphia. \$10,000,000.



MORE THAN 60 ITEMS GIVE YOU COMPLETE SELECTION

You name it, we have it! 12 different packages of antiseptics; 15 various kinds and sizes of bandages and dressings; over 21 burn treatments; and more than 15 miscellaneous items, including eye treatment, snake bite kits, poison ivy ointments, and many others. Write for details.





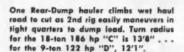
MINE SAFETY APPLIANCES CO. 201 North Braddock Avenue, Pittsburgh 8, Pa. At Your Service: 82 Branch Offices in the United States and Canada



R DEMONSTRATION ... CONTACT YOUR DROTT

MILWAUKEE 8, WIS.

Rig dumps clear over edge of bank to eliminate most dozer clean-up. Rear-wheel brakes are set, front wheels roll free to provide safety, quick pull-away. Fill here will require 350,000 cu, yds.







Safe

On relocation of Pacific

Coast Hwy., 4 Rear-Dumps
haul heavy rock with 95%
mechanical efficiency

STOEN Construction Co., Seattle, Washington, hauling 1,100,000 yds. of rock for relocation of U.S. 101 along the Pacific Coast 110 miles southwest of Portland, Oregon, beat typical mountain grades with 2 C and 2 D Tournapull Rear-Dumps.

On the steep-grade portions of each cycle, Rear-Dump's easy electric steer, giant disc-type air brakes, and excellent traction of big low-pressure tires gave operators complete safety and control, even at high speeds.

5 loads hourly per machine

On one section of the tough job, all 4 Rear-Dumps hauled down 10 to 19% grades for 1400 ft., then returned up same slope. Counting average load time of 1¾ to 2 minutes, plus waiting time at shovel, each unit completed a cycle every 9½ to 10 minutes. Combined production in the well-blasted conglomerate rock averaged 20 loads (175 bank yards) per 50-minute hour.

In spite of the tough grades and very heavy material, Rear-Dump haulers were 95% mechanically efficient. Job Super-

High-speed, rubber-tired excavating • hauling lifting equipment

on mountain grades

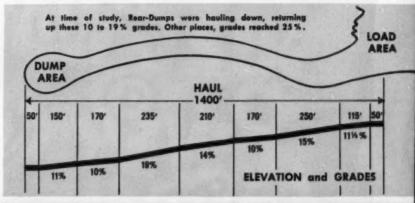
intendent James G. Forrest says, "After working these Tournapull Rear-Dumps on steep, rough grades, and on level roads, I am convinced they are the best rigs for high production and low downtime operations."

Owner "more than satisfied"

Owner Milo Stoen says, "Our Rear-Dumps have proven very economical. We are more than satisfied with their production even when operating in this heavy rock and on steep grades."

If you have off-road hauling problems similar to those found by Stoen, it will pay you to see your LeTourneau-Westinghouse Distributor. Have him show you how Rear-Dump haulers can provide greater operating safety and lower maintenance costs. Ask him how the optional electro-tarder (additional braking action), fingertip electric steering (less operator fatigue), and other revolutionary features can help you gain greater hauling profits.

Recently, Westinghouse Air Brake Company purchased from R. G. LeTourneau, Inc. their earthmoving and related products together with their Peoria, Toccoa, and Australian factories. Adding the high quality standards, precision manufacturing experience, and research facilities of Westinghouse Air Brake to the earthmoving developments of. LeTourneau, gives you assurance that the improved line of equipment offered by this strong new company is the finest on the market. Be sure to check LeTourneau-Westinghouse before you buy.





4-wheel air-brakes, with 705 $\frac{1}{2}$ to 941 sq. inches braking surface per wheel (depending on model) give operators sure, safe braking control.



9-ton Rear-Dump, loaded by both 2-yd, shovel and 4-yd, front-end loader, were heaped in 1 ½ minutes, 18-ton "C's" were loaded in 2 minutes, Allsteel bodies stand up well under shock of the conglomerate rock weighing 4300 lbs. per cubic yard, All material was blasted before loading. Over ¼ lb. powder was used for each yard shot.

Tournapuli-Trademark Reg. U.S. Pat. Off. RDR-540-H



LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

SURE WAY TO LOWER COSTS

AIR COMPRESSORS run efficiently and economically only when they are lubricated to meet the specific operating conditions. No *one* oil can do a satisfactory job under *all* conditions. The sure way to increase compressor efficiency and lower costs is to buy from a source that has the lubricants and the know-how to meet your exact requirements. Call on Texaco.

There is a complete line of Texaco air compressor oils to assure clean, efficient, low cost performance from every type and size of compressor, under every operating condition. A Texaco Lubrication Engineer will gladly recommend the one exactly right to give *you* best results.

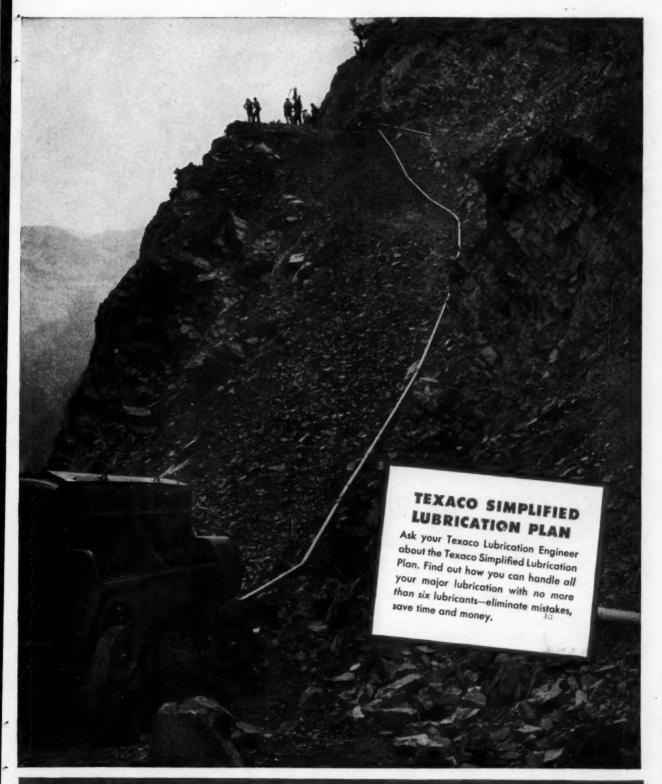
For your rock drills—to extend their life and reduce maintenance costs—use *Texaco Rock Drill Lubricant EP*. Its extreme pressure properties protect against wear, and it prevents rust whether drills are running or idle.

Call a Texaco Lubrication Engineer today — at the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN:
METROPOLITAN OPERA
radio broadcasts
every Saturday afternoon.
See newspaper for
time and station.





Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



concrete mix plant

on rubber

Koehring 16-E twinbatch rides on pneumatic tires . . . works, travels on or off pavement . . . makes self-powered moves at 9 m.p.h. Its rubber-tired mobility increases productive work-time. Its high elevating boom discharges into overhead hoppers . . . pours concrete for buildings, pilings, culverts . . . or batches into trucks. Bucket on 60° elevating boom discharges at a height of 21 feet (higher with special boom). Boom also swings in a 160° arc . . . speeds pouring of floors, footings, highway and airport strips.

This versatile 16-E easily mixes and distributes over 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing, and vertical syphon-type water tank all assure consistent, maximum-strength concrete at top mixing speeds. Get all the facts from your Koehring distributor . . . or write Koehring Co., Milwaukee 16, Wis.

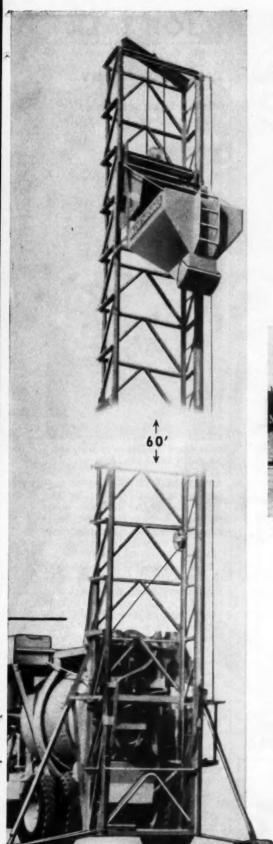
(Subsidiaries: JOHNSON . PARSONS . KWIK-MIX)

KOEHRING 16-E twinbatch®

481/2-foot discharge height with tower

On the Koehring 16-E, the elevating boom is interchangeable with a 40 or 60-foot tower. This gives discharge heights up to 48½ feet for pouring high columns, piers, decks and upper floors. 21½-cu. ft. hoist bucket discharges automatically into 40 cu. ft. overhead hopper. Hopper is easily positioned (at 6-inch intervals) any where along face of tower. Tower is raised... or safely lowered into horizontal carrying position... by the same hydraulic ram used on the elevating boom.







Koehring 16-E twinbatch is never "grounded". Bucket discharges anywhere along 25-foot elevating boom. Clamshell door on 24-cu. ft. bucket is hydraulically operated, opens or closes at any time for controlled discharge.



On large-volume paving, Koehring's big 34-E twinbatch hits top output of 86.7 batches an hour (60-sec. mixing time). This reserve capacity offsets normal job delays, assures an average of 50 batches hourly, 8 hours a day, at no increase in batching, hauling or finishing equipment.





"Timely", precision-finishing is important on any paving job. Koehring Longitudinal Finisher operates at almost twice the speed of a 34-E paver, produces mechanically-accurate concrete slabs, 8-to-30-ft. wide, uniform crown transitions.



Husky RED SEAL DIESEL ... the CUSHIONED SD802

Plus-values inherent in Continental's Cushioned Power design join with stepped-up output in the newest Red Seal Diesel, the 185-h.p. SD802. This overhead-valve six of efficient 4-cycle type offers exceptional performance—high power, low operating cost. As with other

Continental Cushioned Power Diesels, wide interchangeability of parts with Red Seal gasoline

THESE FEATURES ASSURE POWER, ECONOMY, LONG LIFE

Cushioned Power

Combustion Chamber

Removable Cylinder Sleeves

Built-in Oil Cooler

Tocco-Hardened Counterweighted Crankshaft

Tri-metal Replaceable Bearings Throughout **Chrome Top Rings**

Non-stick Compression Rings

Separate Intake and Exhaust Manifolds

Full-length Water Jackets

High-capacity Submerged Gear Type Oil Pump

models minimizes upkeep expense. Write for bulletin containing complete specifications.

1819 BROADWAY, NEW YORK 23, NEW YORK ◆ 1252 OAKLEIGH DRIVE, EAST POINT-(ATLANTA) GA. ◆ 6218 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS ◆ 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF. ◆ 910 S. BOSTON ST., ROOM 1008, TULSA, OKLA.

Continental Motors Corporation

Muskegon Michigan

* JOB TALK *

... About Ideas

Waler Support Holds Workmen Weight, Too



STEEL PLATE is shaped to fit neatly over a 2x4 stud, is nailed on quickly.

AN EFFECTIVE steel waler support coming into use can be just what a carpenter foreman needs to speed a form job and bring greater safety to carpenters, concrete workers and iron workers alike.

This inexpensive form accessory is a simple steel plate devised by the Conver Steel & Wire Corp., New York, to fit neatly and exactly over a 2x4 upright stud and is held in place by two nails. In this position it serves as a shelf for horizontal walers and prevents downward thrust on tie rods that pass through wall forms.

They may be spaced at any intervals, dictated by varying job conditions. Spaced properly, they will support the weight of workmen who may be standing or walking along the walers—eliminating distortion or damage to wedges, spreaders or tie rods.

Installation is simple. First, a support is located on the stud as desired (Fig. 1 above) and fastened with two nails. Next, walers are laid across the support and drawn tight with the tie rods (2). In (3)

(Continued on page 26)



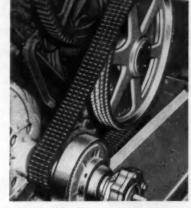
From the earliest development of mechanized equipment, Diamond Roller Chains have established their ability to stand up under severe service conditions. As bigger and bigger machinery was built with power plants of greater horsepower, the long-life stamina and high maintained efficiency of Diamond Chains were well known to experienced engineers, equipment builders and users.

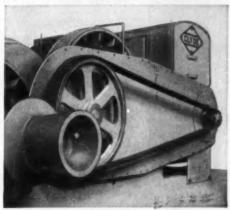
No other Roller Chain has had such wide acceptance —nor has established such impressive records of uniformity of quality for so long a period of years.



DIAMOND CHAIN COMPANY, Inc.

Dept. 418, 402 Kentucky Avenue, Indianapolis 7, Indiana
Offices and Distributors in All Principal Cities





Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER





WALERS ARE LAID across metal support and drawn tight with tie rod. No toenailing.



STURDY WALKWAY across walers can be used repeatedly without damaging tie rods.

a workman uses the assembly as a walkway. These photos show waler supports in use on a foundation job in New York City requiring extensive formwork.

In another application a contractor was pouring concrete for several parallel walls. He placed steel waler supports on every stud along the top waler. They gave enough rigidity to allow a work platform to span the space between the walls with complete safety for the men and with no intermediate shoring required. When they are used, they take the place of scrap wood scabs and much toenailing can be eliminated.

Keep Moving Dirt In Wet Weather

Whether preparing for short wet spells or prolonged rains, keep the haul road smooth. Fill in holes and pockets that impound water with dozer, scraper or grader and assure good drainage along the sides. Where a wet top surface has become slick for rubber-tired units to work at top speed, haul in a load of sand or cinders and spread a thin coat, if possible. Heavy grades become slippery quicker and stay slippery longer. There-

(Continued on page 32)



adjustment) can be used as a flat-head shore, a male-head shore and as an extension shore by merely inserting any length S4S 4 x 4 into the steel head. It is instantly adjusted to "hairline" accuracy and has no pins or screw adjustments to become clogged or cause needless delays. Wooden upper members permit easy fastening of lateral or diagonal bracing.

THE STANDARD ROOSHOR

(WITH WOOD HEAD)

The adjustable shoring device offering instant and accurate adjustment within the range of three sizes: 8 ft. to 14 ft.; 7 ft. to 13 ft.; and, 5 ft. to 9 ft.

ROOS COLUMN CLAMPS

Consists of two identical hinged units that eliminate waste time in fitting and adjusting . . . foolproof . . . no wrong way to put them on. There are no loose parts to cause needless delays and a hammer is the only tool needed.



"USED BY CONTRACTORS COAST-TO-COAST OVER 35 YEARS"

Rooshers and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities. Write for Bulletin 254.

BAKER-ROOS, INC.

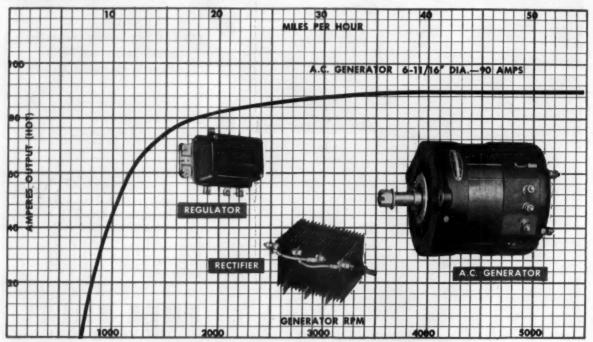
602 WEST McCARTY STREET . INDIANAPOLIS 6, INDIANA



Power Packed and



HERE'S THE A.C. ANSWER TO EXTRA-HEAVY ELECTRICAL DEMANDS



DELCO-REMY

A. C. Generator, Regulator and Rectifier

Here's the answer for "problem" vehicles—Delco-Remy's new long-lived A.C.-D.C. charging system! It's specifically designed to meet the extra-heavy electrical demands of contractors' trucks and other vehicles equipped with two-way radio, floodlights or any extra electrical units . . . ample current reserve picks up discharged battery quickly in operation. Delco-Remy A.C. generators are suitable for use at all engine speeds.

With output ranging from 30-40 amperes at curb idle and up to 90 amperes at higher engine speeds, the new Delco-Remy A.C.-D.C. charging system meets all electrical needs under the toughest operating conditions. Included in the new system is the A.C. generator, a matching regulator, and a rugged, dependable dry-plate rectifier which converts generator A.C. output to direct current.

Application packages complete with installation instruction sheets for popular makes of cars and trucks are now available. The conversion job is simple. For further details and application data, see your nearest United Motors distributor.

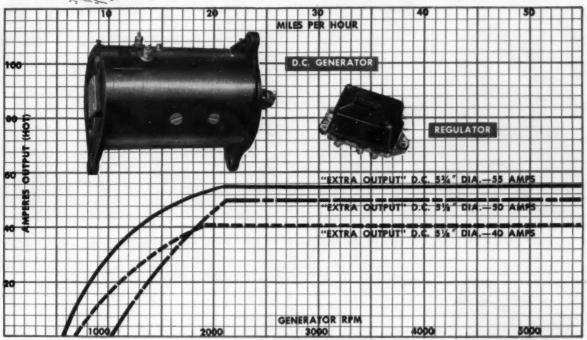


WHEREVER WHEELS TURN OR PROPELLERS SPIN

Right for the Job



HERE'S THE D.C. ANSWER TO HEAVY ELECTRICAL DEMANDS



DELCO-REMY

Extra-Output D. C. Generators and Matching Regulators

Delco-Remy extra-output D.C. generators are an economical answer to the electrical needs of contractors' pickup or panel trucks as well as other vehicles with additional lights, two-way radios, or other special electrical equipment in medium to heavy-duty service. Delco-Remy extra-output D.C. generators are low in cost, simple to install, economical to maintain.

DELCO-REMY 40-AMP GENERATOR has low cut-in, about 7 mph, charges from 11 to 17 amperes at curb idle . . . full output about 18 mph—for vehicles customarily used in heavy traffic.

DELCO-REMY 50-AMP GENERATOR has slightly higher cut-in, about 11 mph... full output about 21 mph—for vehicles customarily operated at higher speeds, with minimum slow driving.

DELCO-REMY 55-AMP GENERATOR has very low cut-in, about 6 mph; charges at curb idle from 20 to 30 amperes . . . attains full output at 20 to 25 mph—for vehicles customarily operated at low speeds with added electrical loads, such as contractors' field cars.

For further details and application data, see your nearest United Motors distributor.

Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION, ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN





Don't let the low price fool you! Sure, we are talking price... because the new "MC-104" is the lowest priced Moto-Crane you can buy. But no other crane on rubber approaches the design quality and performance of this new Lorain "baby". Look what you get in this "bargain in quality":

A new 45 m.p.h. Moto-Crane Carrier—An entirely new design developed exclusively as a shovel-crane mounting. Powered by a Ford engine, with 8 forward speeds and 2 reverse speeds, its "6x4" drive delivers power to both rear axles. Ten big 9:00x20 tires provide soft-ground flotation and Equalizer Rocker Beams provide constant ground contact and tractive effort for off-the-road travel. There's a sturdy, all-welded frame, with 15" deep side members, to provide a solid base. Mounted on this sturdy carrier is a turntable design that has "borrowed" many of the time and field-proved Lorain "TL" big machine features. The clutch shaft alone contains 18 anti-friction bearings. The convenient "Packaged Component" design permits quick changing of Hoist Shaft, Clutch Shaft and Engine in complete units. 5 interchangeable booms, matched to "MC-104" design, complete this low-priced, quality package.

Want proof? Phone your nearby Thew-Lorain Distributor. Ask him to demonstrate the "MC-104". He'll show you why . . . you get more in the "104".

The Thew Shovel Co., Lorain, Ohio.

BRAND NEW CARRIER

Newly designed throughout by Thew... built by Thew... for shovel-crane operation. The kind-of "high quality" carrier you would expect from the pioneer builder of rubber-tire cranes. The "MC-104" is available as a 3-axle, "6x4" Carrier, with power on both rear wheels, easy-acting Hydraulic Brakes. Out-rigger boxes and beams optional. Rear fenders removable.

THE NEW "MC-104" SHOVEL BOOM

Powerful, independent, positive cable crowd — 14 ft. boom — 12 ft., 7 in. stick. 1/2-yd. dipper capacity. Rugged, "big machine" construction. Power operated dipper trip.



DORAIN
BUILDS THE
MOTO-CRANE
Ask Your Distributor Why?



1/2-YD. CLASS - Available with 2 or 3 axle carrier.

LORAIN MOTO-CRANE FAMILY

Five more sizes complete the Lorain line of Moto-Cranes...all the way up the to big MC-824...the world's largest crane on rubber tires. Also, many sizes available as single engine, Self-Propelled models. If you need a crane on rubber, look no further than your Thew-Lorain Distributor...he has the greatest selection!



3/4-YD. CLASS — Available in 2 lifting capacities.



HEAVY-DUTY 3/4-YD. CLASS — Additional capacity for longer boom work.



2 TO 3-YD. CLASS — Tops in capacity. The world's largest crane on rubber.



1-YD. CLASS — Still more crane capacity — as "6x6" or "6x4" carriers.

LÖRAIN.

YOU GET MORE IN THE "104"

The Thew Shovel Co. Lorain, Ohio

Gentlemen: Please send the following:

New "MC-104" Catalog.

☐ Data on other Moto-Crane models

as follows:

Name.....

Address.....

Thermoid quality helps assure Caterpillar® performance





Long wearing, dependable Thermoid Clutch Facings are being assembled.



Tough, flexible Thermoid Hydraulic Hose is being attached to a Caterpillar D4 Tractor.

Caterpillar specifications for original equipment are exacting. That's why you'll find Thermoid Clutch Facings on their D2 and D4 Diesel Tractors ... and Thermoid Hydraulic Hose in a number of Caterpillar applications.

In addition to woven and molded Clutch Facings and Hydraulic Hose, Thermoid also furnishes Caterpillar with Radiator Hose, and a variety of other rubber products and friction materials.

Superior engineering and manufacturing facilities, plus close personal attention and cooperation on individual problems, makes Thermoid the choice, for certain production items, of Caterpillar, and other leading manufacturers in many fields.



Thermoid Company Industrial Friction Materials Division Trenton, N. J.

JOB TALK . . . Continued from page 26

fore, reduce grades to a minimum.

Watch the drainage in the borrow area. Load down hill in the direction of natural drainage and keep the area free of low spots that induce ponding. Ruts often can be avoided by leaving the borrow area over differing travel routes.

When excavating cuts where wet conditions prevail—or when rain threatens—keep the area as solid as possible. Do not operate rippers far ahead of scrapers because open soils absorb water rapidly. Better to settle for smaller loads than shut down the job.

Keep the fill compacted as solidly as possible by spreading loads in thin, even layers. Help compaction by changing part of travel of each load. During wet seasons it is good practice to keep the fill level and give it some crown for drainage at the end of the shift.

Some variation in tire pressures, with haul speeds adjusted accordingly, helps rubber mounted units to obtain better footing where soft ground prevails. Consult the manufacturer. (Condensed from tips supplied by LeTourneau-Westinghouse.—Ed.)



Single-Wheel Roller

Hard-to-reach corners of the steeply sloping walls of a reservoir for the Los Angeles Department of Water and Power's Valley Steam Plant were compacted efficiently with a single-wheel roller.

Grading Contractor Tyrrell & Davis Co., Pasadena, discovered that corner areas were inaccessible to ordinary compaction rollers—while compacting fill around six 171,000-bbl fuel oil tanks. The job was done by mounting a rubbertired wheel on the end of a Warner & Swasey Gradall boom. Total weight of wheel is 2,700 lb.

Controlled hydraulically, the operator quickly compacted odd corners, and the machine was freed for many other operations.

THE NEW CATERPILLAR D8 TRACTOR

More Power... More Profit... More Production...

The new Caterpillar D8 Tractor...designed and built by Caterpillar, sold and serviced by the world-wide Caterpillar Dealer organization.

With 150 HP available at the drawbar, the new D8 offers new standards of track-

the new Do ones, no type tractor power, production and value. Meet the new boss of the crawlers! Meet the new boss of the crawlers! Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

• The new D8 has more drawbar horsepower...horsepower that works for you.

- The new D8 is compact...it retains the maneuverability needed in tractor applications.
- The new D8 is versatile...matched to Caterpillar-designed Bulldozers, Scrapers, Rippers and Pipe Layers.
- The new D8 is also a pusher...available attachments make this machine a powerful push tractor.

THE NEW D8
Boss of the Grawlers

CATERPILLAR

REGISTERED TRADE MARK

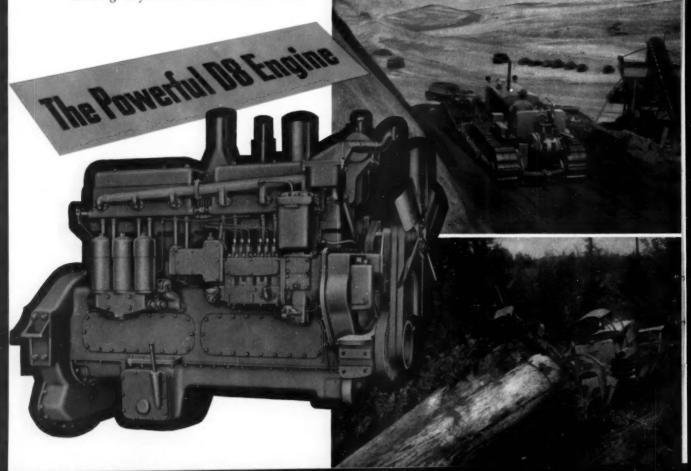
150 Drawbar Horsepower Provided by Caterpillar D8 Engine

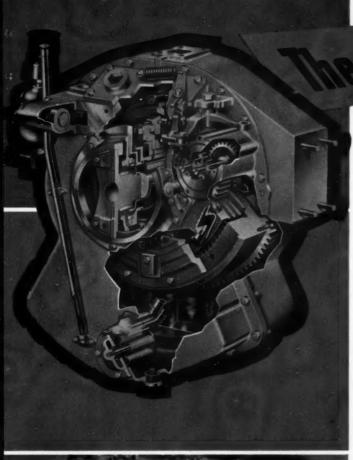
The new high performance of the Caterpillar D8
Tractor stems from the 185 HP, 1200 RPM diesel engine.
Important new features, built into the time-tested and job-proved Caterpillar design, contribute to longer engine life and decreased operating costs as well as higher power. Some of these features are: new cylinder head incorporating valve rotators and hardened valve seat inserts, new camshaft, aluminum alloy pistons with stainless steel heat plug in the high temperature zone and a cast-in iron band for the top piston ring groove. A larger oil pump driven from the front of the crankshaft has an exclusive throttling valve pressure control which assures correct lubrication for all moving parts from the first turn of the crankshaft.

This powerful engine, with these and many other advanced features, is one of the big reasons why the D8 gives you more value than ever before.













Exclusive with Caterpillar Profitable to You...

Only Caterpillar offers you the long life and low maintenance cost of the oil clutch. The outstanding feature of this advanced clutch is that oil films absorb the friction and heat. The metallic friction surfaces do not come into contact until the last revolution or two before engagement. The clutch has its own lubrication system with gear-type pump and suction screen. The pump supplies oil under pressure to the hydraulic booster, which makes the clutch exceptionally easy to operate. Oil is also delivered to the inner diameter of the three clutch plates. This continual lubrication and cooling is the principal reason for much longer periods between adjustment and replacement than is possible with the conventional dry clutch. The oil clutch is another big reason why the D8 is a better buy.

THE NEW D8 GIVES YOU...

- 150 Drawbar Horsepower
- **New Long Life Engine Features**
- **Exclusive Oil Clutch**
- Flywheel Clutch Booster
- **New High-Strength Frame**
- "Hi-Electro" hardened track grouser tips
- Self-energizing Steering Clutches
- New, Large Air Cleaner
- Weight 38,155 lbs. (shipping weight)
- **Compact Fuel Injection Equipment**
- **Double Universal Joint to Protect Clutch** and Transmission Bearings

Caterpillar

THE NEW D8
Boss of the Grawlers

Your Caterpillar Dealer, with genuine Caterpillar parts, factory-trained service personnel and competent application counsel, is ready to show you the advantages of the new D8 Tractor. He can...and will...prove its power and production capabilities. Call on him for complete details.

For power, production and profit, make your next tractor a new D8...boss of the crawlers.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

THE NEW D8
Boss of the Crawlers

The new Caterpillar D8 Tractor offers new highs in earthmoving production in push-tractor operations. The D8, equipped with No. 8S Bulldozer, heavy duty track roller guards, crankcase guard and tandem pusher frame, will cut your work cycles to a minimum.

Fast and maneuverable, the D8 applies a full 150 HP to the job of loading your hauling units in new record times. Push-loading, singly or in tandem, is provided to meet the conditions of your job.



REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

Due to its special adhering qualities, Globe Form Grease requires only a thin coating for utmost effectiveness. In fact, one gallon adequately covers approximately 200 square feet! And in addition — Globe Form is stainless, leaves a whiter smoother surface, and eliminates the need for painting.

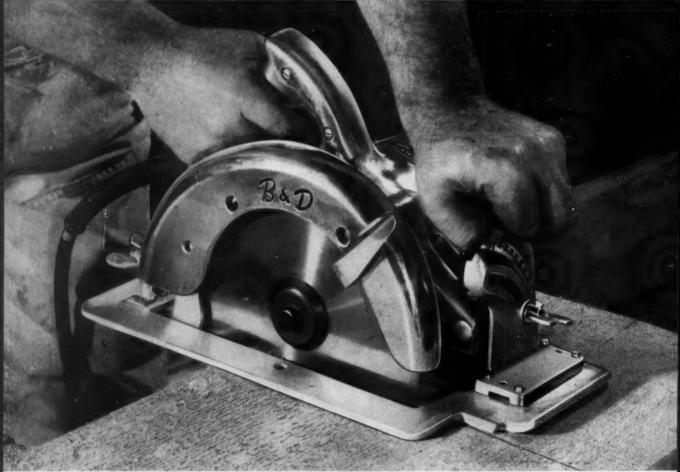
Why not write for full particulars today? Once you use Globe Form Grease, you'll understand why engineers and contractors hail it as the "wonder grease" for concrete forms.

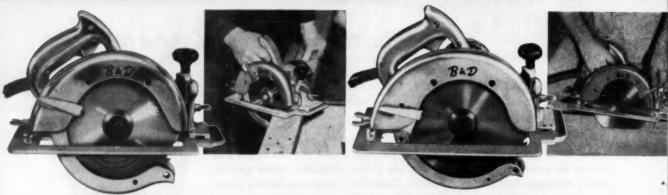


BORNE, SCRYMSER COMPANY

ELIZABETH, N. J. . CHARLOTTE, N. C.

We proved it to Zehman &





NEW B&D 8" HEAVY-DUTY UTILITY SAW

NEW B&D 9" HEAVY-DUTY UTILITY SAW

ALSO: New B&D 6" Adjustable Saw . . . \$64.50 and New B&D 7" Saw . . . \$84.50 . . . Both Heavy-Duty Saws with all the Features Described Above.

Wolf - we'll prove it to you!

NOW! BLACK & DECKER Saws give you every feature you want for every job you do!

Zehman & Wolf Construction Company of Cleveland, Ohio, hires as hard-hitting and hard-working a crew of carpenters as any you'll find. We felt that these men would be the best judges of saws, so we took a new B&D Heavy-Duty Saw out on the job and asked them to try it. And did they give it a workout! They made rip cuts, cross cuts, box cuts and bevel cuts with it. They hefted it for weight, tried different depths of cut, balanced it,

used it right-handed, left-handed-with one hand and with two. And when they were finished, they were sold! They were sold on the power of the new B&D Saw . . . on its features . . . on the amount of work it gets through. As Carpenter Hy Weltman put it: "The new B&D Saw has a lot of power and it's easy to use. Not only is the lever on the lower guard a good safety factor, but all of B&D's new features make it a great help."



EASY-GRIP HANDLE . . . cord is out of the way!



at natural sawing angle toughest jobs . . . motors shoe . . . for solid base, . . . not one but two big large guard lift-lever big trigger switch, heavy plus extra hand-hold, and are B&D designed just for greater stability at any these saws



POWER TO SPARE... for HUSKIER BUILD... larger 2 - POINT SUSPENSION SAFETY-LIFT GUARD... MAN-SIZE CONTROLS... depth or angle!





wing nuts hold saw steady lets you retract lower wing nuts give faster acat every depth and anglel guard by hand safely!



tion, quicker adjustments!

PROVE IT YOURSELF GET A CHANCE TO WIN \$1,000.00

AT YOUR DEALER'S! See and try the great new Black & Decker Saws yourself, soon . . . AND GET A CHANCE TO WIN \$1,000.00 at the same time! Just ask your building supply or hardware dealer to show you the new B&D Saws. Watch him demonstrate them. Try them yourself. Note their many features. Then get an official entry blank. Fill it out, following the easy directions, and leave it with your dealer. He'll do the rest . . . and you'll be in line for the grand prize . . . \$1,000.00 . . . or one of the many other cash awards. See your dealer right away quick! For dealer nearest you, see where-to-buy-it section of local phone book, under "TOOLS-ELECTRIC."

RIGHT ON THE JOB! To make the big B&D Saw Contest even easier for you to enter, we'll arrange to have the new B&D

Saws brought right out to your job site, demonstrated to you, let you try them yourself! And you'll get your official contest entry blanks right then and there. To arrange for this, just fill out the handy coupon below and mail it to us today!

"TOOLS - ELECTRIC"



100	Black	& Dec	ker
Section of Mr.		Dimil	
	PORTABLE	ELECTRIC	TOOLS

V	(8)					
THE BLACK & DEC I want to see a No obligation,	and try	y the				job
Name						
Company						
Address						
City			Zoi	ne	State	
Job Location.					******	

Engineering Sidelights of Helsinki Olympic building of large stadiums was stimu-Stadium, Finland: One of the most modern in the world, the Helsinki Olympic Stadium was intended as the site for the 12th Olympic games. World War Il forced cancellation of the games, but the stadium's bold tower still stands as a dramatic expression of modern design and construction. The

lated early in the 20th century by the use of a relatively new materialreinforced concrete. Since then, skillful engineers have daringly exploited the potentials of reinforced concrete to build huge stadiums where new records for capacity, as well as performance, have been established.

Let the Compact Traylor TY Reduction Crusher Set New Production Records for You

The compact, simple design of a Traylor TY Reduction Crusher incorporates maximum strength with great efficiency to set production records like this: 43 tons per hour of 3/8" product; 300 tons per hour of 13/8" product; or 540 tons per hour of 31/2" product. TY Crushers are built in 10 sizes with feed openings from 3" to 22". Every Traylor TY employs the original non-chokable, self-tightening bell head and curved concaves that, for years, have assured dependable production with little downtime loss. Why not examine all the features of the Traylor TY Reduction Crusher in greater detail? Send for illustrated Bulletin 7112 today.



TRAYLOR ENGINEERING & MFG. CO. 627 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York • Chicago • San Francisc Canadian Mire: Canadian Vickers, Ltd., Montreal, P.Q.













with feed openings

from 3" to 22".



Tandem Jaeger Spreaders lay new Tennessee material

18" of stiff base mix placed true to grade, ahead of weather

Tennessee's new base material is a dense and sticky pug-mill mixture of crushed limestone containing a high percentage of fines, calcium chloride and water. It looks and feels a lot like low slump concrete.

One of its first applications required Knoxville Construction Co. to place 18" of this material in three 6" courses. Each course had to be laid true to grade and cross section and rolled immediately to insure proper compaction and avoid weather hazard.

Two Jaeger self-propelled Aggregate Spreaders, used in tandem, placed parallel strips which could be rolled in one operation. A side bleeder gate, in the rear spreader, provided material for blending the lanes.

Straight-edge runners, carrying the spreaders' strike-offs, averaged out initial subgrade irregularities and placed the successive courses accurately to grade.

Placement by this method was so fast that progress depended entirely on material deliveries. Daily production varied from 3000 to 3800 tons. The two spreaders could easily have laid 6000 tons had the material been available.

If you have the job of laying any type of base or surface aggregate, plant-mixed stabilized soil or free-flowing bituminous material, accurately and at low cost, talk to your Jaeger distributor or send for Jaeger Aggregate Spreader Catalog SPS-1.



Laying stone without hand labor: Paul L. Britton, Inc. accurately placed 8-ton truck loads in 45 seconds, for highway base near Kinnard, Pa



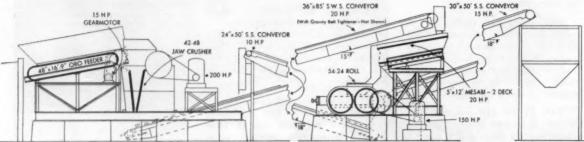
Laying Airport Base: Del Webb and San Xavier Construction Companies used Jaeger Spraader to place stabilized soil base for 200,000 sq. yds. of runway at Tucson Municipal Airport.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue · Columbus 16, Ohio

CONCRETE SPREADERS and FINISHERS . AIR COMPRESSORS . PUMPS . CONCRETE MIXERS . LOADERS





EXTRA BIG EQUIPMENT SPEEDS WORK ON WEST VIRGINIA TURNPIKE JOB

In the mountain country of West Virginia, big contractors anticipating turnpike jobs are watching closely the rapid progress being made on the new West Virginia turnpike. And the center of attraction is a high capacity, low cost rock crushing plant near Cabin Creek which is preparing 575,000 tons of 3" minus material with a minimum of 15 percent fines for the base course and paving on 20 miles of the new super-highway.

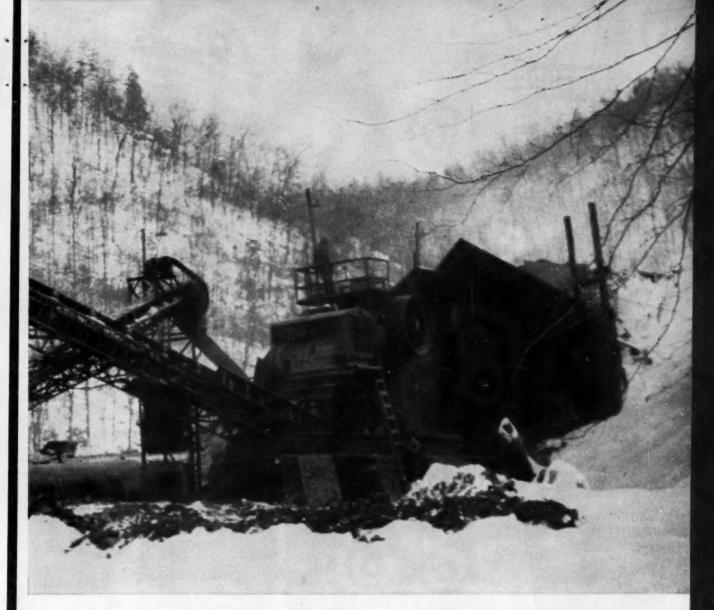
This crushing plant is owned by the Frank Mashuda Co., Gallagher and Nelson, and the Arthur Overgaard Co.

Crushing 450 Tons Per Hour

The plant operates as Tyler Breslin Quarries of Charleston, West Virginia and is producing specification material from hard sandstone at the rate of 450 tons-per-hour with 100 percent crushing.

Heart of the plant is the world's largest overhead eccentric jaw crusher, a PIONEER 4248 with 4 cubic yard crushing chamber. Equipped with self-aligning roller bearings and hydraulic adjusting mechanism, it represents the modern trend in crusher design.

Crusher base is split horizontally for easier handling, and hydraulic pressure grooves in the shaft under the bearing races, make it possible to remove bearings with fingertips. Moving and stationary jaws are in sections which can be



reversed for longer manganese wear.

Double wall, box type construction gives the base added strength and makes it possible to keep total weight of crusher under 95,000 lbs.

The giant crusher is supplied by a 48" x 16" PIONEER ORO feeder equipped with massive 5%" thick cast manganese steel pans which take the huge loads dumped by the quarry trucks. The feeder pans have integrally cast links and are driven by manganese steel sprockets with renewable teeth.

Both units (crusher and feeder), along with motor mounting, are joined in a single primary plant mounted on 21" I-beam skids set on a reinforced concrete foundation.

Secondary Unit Has Big Roll Crusher

Completing the all-PIONEER installation is a secondary plant consisting of a 54" x 24" roll crusher with one smooth and one corrugated shell, and a 5' x 12' Mesabi-type 2-deck gradation screen.

Mesabi-type 2-deck gradation screen.
Support for the Mesabi screen, an extra heavy duty unit designed specifically for rugged jobs, is furnished by an extension of the roll crusher base. Three

PIONEER conveyors totaling 185' in length and a storage bin complete the plant.

In operation, material from the primary plant that passes the bottom deck is conveyed directly to the storage bin; oversize from both decks is returned to the roll crusher for further reduction.

Pioneer Helps Select Plant Site

The high-producing Tyler Breslin Quarries turnpike plant shown above was designed by a PIONEER field engineer in close collaboration with the purchaser and his equipment dealer.

This engineer surveyed the site, studied the material and specifications, analyzed the problem, then furnished the details to PIONEER's engineering department which developed the plan shown at the left.

Complete erection prints were provided, and experienced PIONEER assistance was given in the erection of the plant.

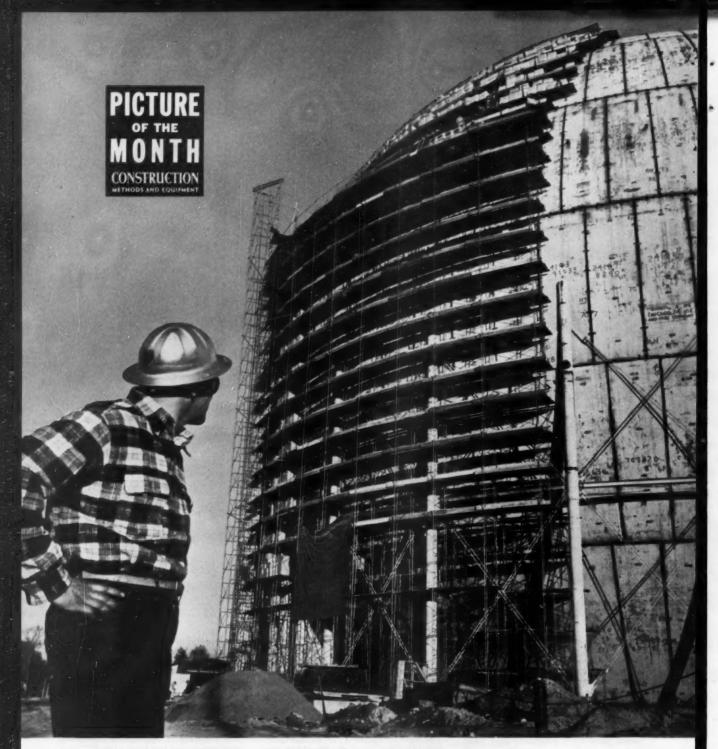
But PIONEER'S responsibility didn't end when the plant when into operation. Though PIONEER equipment is recognized in the industry as requiring a minimum of upkeep, an alert, worldwide distributor service organization and factory-trained maintenance men are available whenever quick service is needed.

The Pioneer Edge In Action

Couple this service with the creative engineering that has accounted for an impressive list of "firsts" in the design and building of aggregates producing equipment, and you have a combination that's hard to beat. Operators who have seen the performance of PIONEER equipment in the field . . . call it the PIONEER EDGE.

For further details on the turnpike plant and other PIONEER high output, low upkeep crushing and screening installations, write Pioneer Engineering Works, Inc., Minneapolis, Minnesota (subsidiary of Poor & Co., Chicago).





Sphere Steps

World's largest ball of welded steel plates (leakproof, too) is being covered by men working from 2,000 Safway scaffold frames and 5,000 scaffolding planks flowing up from the ground to a circular walkway some 165 vertical feet up. The scaffolding covers one-eighth of the 225-ft dia sphere's circumference. Frames and planks are removed at one end and re-erected at the opposite and continually as the work progresses around the big globe. A 128-ft Safway hoist tower takes materials most of the way up. It is left intact as scaffolding is moved on and another tower erected at the next 45-deg interval eventually resulting in seven hoist towers around the circumference. The sphere was built for the Atomic Energy Commission at the Knolls Atomic Power Laboratory, West Milton, N. Y., operated by the General Electric Co. General contractor is Rust Engineering Co., Pittsburgh. (More details on picture-story page in this issue.)

Consider net hp--Consider live wt!



The design of a K-360's crawlers is another important feature. Perfect guiding, selfcleaning, smooth traveling crawler tracks . . . improve operation and minimize wear.

Figure a job with a Speed-o-Matic controlled K-360 ... and your bid will be a tough one to beat!

LIKE all Link-Belt Speeders, a 1½-yd. K-360's 142 net hp gives you more digging power . . . more lifting power than any rig in its class. This quality-built rig has the stamina (see box) to handle the extra net hp week after week . . . month after month . . . without undue wear.

Consider these facts along with the 25% greater output you get with Speed-o-Matic controls, the true power bydraulic system: (1) Faster, easier, more accurate operation, (2) minimized operator fatigue or end-of-the-shift letdown, and (3) exceptionally low maintenance and service costs.

These are a few of the reasons why a K-360 helps you get more jobs without shaving profit. Get the complete story. Ask your distributor or write for catalog 2259.

LINK-BELT SPEEDER CORPORATION



COMPARE 11/2-yd. shovel-cranes with and without counterweight. That test spotlights the size, weight and heft built into the working parts and structure. You'll find the K-360 has greater "live weight."

JUNGBELT SPEEDE

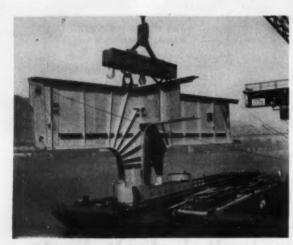
Construction News in Pictures ...



AERIAL VETERAN — This hard-working cableway carriage now is carrying concrete on its fourth major dam project, Cleveland Dam, a water supply facility for the Greater Vancouver

(B.C.) Water District by Gilpin-General-Bay Constructors. The 1,300-ft, 25-ton cableway, made by Washington Iron Works, Seattle, also served Bonneville, Ross and Hungry Horse Dams.

(Continued on page 48)



T-FORMATION IN 3-D — Thirty-four-ton star girder is eased aboard a barge at the American Bridge plant along the Ohio River for a trip to the Chickamauga River Dam Bridge of the TVA. Eighteen of these members are going into the bridge.



DRILLING IN ROUGH PLACES — Logging roads are built by Jack Morgan, New Meadows, Idaho, with the aid of this Caterpillar D8 mounting a PTO-operated Schramm Model 420 compressor on its back and a wagon drill out front.

DRIED UP AND DUG OUTin just 30 days



Pumping Contractor: American Dewatering Corporation, New York-Houston, Texas

PICTURE 22' OF WATER IN THIS HOLE! That was the problem facing the contractor in excavating for a pumping station on the Ouachita River in Arkadelphia, Arkansas.

His first step was to install a Moretrench Wellpoint System. Although heavy gravel and marl at grade complicated the pumping operations, the Moretrench System controlled the water perfectly, and dry digging proceeded rapidly. Banks were sloped. Sheeting was unnecessary. In 30 days, the excavation was down to grade. Time and money were saved!

Constructive help on how to handle your wet job is as near as your phone. Call any one of our offices for a prompt answer to your problem.

MORETRENCH CORPORATION

90 West St.

4900 \$. Austin Ave.

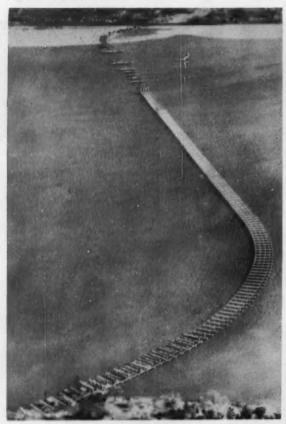
7701 Interbay Blvd.

315 W. 25th St. Houston 8, Texas Rockaway New Jares

Western Representatives Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Gec. W. CROTHERS Limited, Toronto, Ontario

Construction News in Pictures . . . Continued



S-CURVE IN ZEE BRIDGE — Curves for easy approaches to the Tappan Zee bridge carrying the New York Thruway across the Hudson River are outlined by substructures. Piers in the foreground (west bank, at Nyack) are being placed by Construction Aggregates Corp. In the distance (east bank, at Tarrytown) is the work of Merritt-Chapman & Scott Corp.—Wide World photo



TRENCHER HELPS DRAGLINE—Whittle Construction Co., Dallas, Tex., excavated for a 2,500,000-gal water tank in near-by Casa Heights with a dragline. The subsurface was so hard the drag bucket could hardly get a bite. So Whittle used his Cleveland 140 Trencher to dig shallow trenches across the area, providing a fresh hold for the dragline.



FIRST PAVING ON THE PIKE — Late in the season, Harrison Construction Co., Pittsburgh, started pouring concrete at the eastern end of the Ohio Turnpike. Equipment here is placing a 10-in, slab 24 ft wide. Harrison uses a complete package of Blaw-

Knox and Foote paving machines and forms. Two 34-E dual-drum pavers are used, one for the base course and the other for the top course. Concrete placing is done by two spreaders; the second one is followed by a two-screed finisher.

3 SUPERIOR ACCESSORIES FOR more efficient handling of "TILT-UP" SLABS



"ANCHOR" INSERT in both the "Tilt-Up" slab and the floor slab provides anchorage for slab brace bolts.



SLAB
BRACE
is quickly installed
and adjusted. Has
exclusive pivoting
action.



Are you bidding on a "Tilt-Up Slab" job? Are you starting a "Tilt-Up Slab" Job? Then you will be interested in these SUPERIOR accessories, designed for faster and more efficient handling of precast panels.

The Superior "Pick-Up" Insert provides dependable anchorage for bolts which secure a lifting angle to which slings are attached when the panel is raised. "Anchor" Inserts in both the "Tilt-Up" slab and the floor slab secure the temporary bolts to which the braces are attached. With Superior's adjustable and pivoting Brace you have an efficient as well as inexpensive answer to both ordinary and unusual bracing problems . . . you merely assemble with 2 x 4's of lengths to fit individual jobs.

Wherever slabs are being "tilted-up" ... on the Pacific Coast ... in the Midwest ... the South, and in the East ... contractors are consistently using Superior Inserts, Anchors and Braces. For details request a copy of Bulletin TU-2.



SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

New York Office 1775 Broadway, New York 19, N. Y.

Pacific Coast Plant 2100 Williams St., San Leandro, Calif.

Check these Profit making Features of the NEW...

DEMPSTER GRO-101

NEEDS NO WHEEL TRACTION

Loading of the bucket is accomplished by the exclusive Hydraulic Crowd and Hoist power of the Dempster-Diggster.

MAXIMUM DUMPING HEIGHT

This is important because the Dempster-Diggster has the digging height capacity to handle jobs oftentimes expected only of power shovels. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

TORQUE CONVERTER

Excavating shovels and front end loaders have to take the abuse and punishment of intermittent jolts. The Dempster-Diggster is constructed and built, not only to accept this at its full value, but to smooth out the sudden jerking and jolting by means of a torque converter. The torque converter is a mechanical feature, but its effect on greater efficiency of the machine and lower operating costs is so great it is one of the important reasons why you want a Dempster-Diggster!

MINIMUM TURNING RADIUS

The outside turning radius of the Dempster-Diggster is only 18'3".

ELECTRIC BUCKET TRIP

You get a machine with an automatic electric bucket trip for dumping drop bottom digging bucket . . . giving you instant dumping and instant closing of bucket.

TRUCK-SPEED MOBILITY

Dempster-Diggster moves from job to job without the use of hauling equipment or can be towed behind a dump truck with the use of a tow bar.

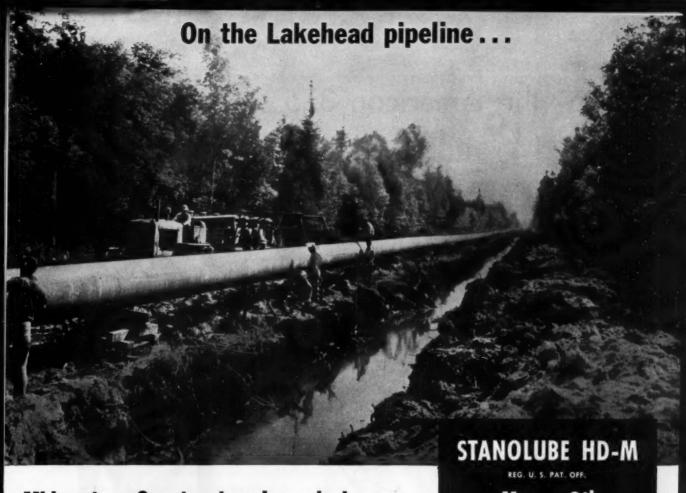
HYDRAULICALLY STEERED

Your Dempster-Diggster has positive hydraulic steering booster which is operated by separate, individually driven pumps. Your operator stays fresh, will not tire with this finger-tip steering.

Here's a shovel that won't skim the bank or bottom—but gets a full bucket with every stroke. Here's a shovel that gives you the extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information, including Folder No. 3116.



DEMPSTER BROTHERS, 334 Shea Bldg., Knoxville 17, Tennessee



Midwestern Constructors Inc., slash through 97 miles of roughest terrain

• Rough, tough terrain . . . dirty weather . . . real bush country right in the heart of America. Here was a job that could take both men and machines apart. But the job was completed—and on schedule! These men knew their work . . . they had the machines . . . and they had a lubricating program that kept their equipment moving.

Midwestern Constructors Inc., contractors for this roughest part of the 635 mile Lakehead Pipeline, between Superior, Wisconsin and Sarnia, Ontario, have this to say about the Standard on-the-spot service: "We gave our equipment a beating but it came through with flying colors because, as hard

as we treated it, sound lubrication service and products kept it on the job."

Your nearby Standard Oil office and warehouse stocks STANOLUBE HD-M and a complete line of Standard quality fuels and lubricants for fast local delivery. Here too is head-quarters for your Standard Automotive Engineer. Call him today. Or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.



Motor Oil

STANOLUBE HD-M, Standard Oil's new and better heavy-duty motor oil, combines more effective detergent-dispersant action with greater oxidation stability... keeps deposits and wear at a minimum in all types of engines under the toughest operating conditions. Put Stanolube HD-M to work for you.

(Indiana)

STANDARD OIL COMPANY STANDARD

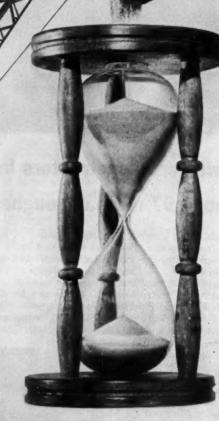


How the American 375...

adds

PRODUCTION HOURS

to the day



On job after job, the American 375 does more work faster! Why? Because extra capacity is built right in! Capacity loads, load after load, add extra minutes to every working hour. Extra minutes that pay off in extra profits!

It'll pay you to find out about the American 375 . . . crawler or truck crane, it invites comparison! Write or call your nearest distributor!

American Hoist

St. Paul 1 Minnesoto

manufacturers of:

Crawler and Truck Cranes • Steel Derricks • Crosby Blocks • Sheaves • Locomotive Cranes • Hoists
Portable Material Elevators • Genuine Crosby Clips • Revolver Cranes • Utility Hoist

HAROLD W. RICHARDSON, Editor

A Little Progress

IN A JAMMED-UP narrow street in midtown New York, we watched a huge flatbed semi-trailer loaded with bricks pull up in front of a building under construction. Soon two workmen, each with a wheelbarrow, sauntered out of the gate and parked their barrows in the middle of the street alongside the trailer. Then they transferred the bricks one at a time from truck to wheelbarrow. When a barrow was about half full, its jockey would wheel the small load into the building, dodging taxis and trucks in the process.

All in all, it was an agonizing reminder of the fact that materials handling is still a mighty expensive item in building construction. Swapping a helper's hod for a wheelbarrow seems like very little progress.

But we can report a little progress in handling materials on DuPont's job at Pompton Lakes, N. J., as indicated in an article on page 56 of this issue. There precast concrete roof slabs were delivered in bundles for unloading and handling by fork-lift trucks. DuPont's construction division reports a cost saving of 30% over conventional handling of individual slabs by hand.

Other equally efficient handling methods can be found on building jobs from time to time, but they are few and far between. The biggest promise for lower building construction costs lies in full mechanization of material handling. That would be real progress.

Promising Progress

Concrete paving procedure has shown steady progress through the years with adoption of the paver, batch truck, track forms, mechanical screeds and finishers, dual-drum pavers, spreaders and vibrators. Now comes another forward step that promises even greater efficiency and lower costs, the formless paving machine as described on page 82 of this issue. Formless isn't the correct designation, for in reality an enterprising contractor, with the farsighted cooperation of the Illinois State Highway Department, has combined his spreading and finishing equipment with self-propelled slip forms.

Regenhardt Construction Co., of Cape Girardeau, Mo., cut costs of laying a concrete base for an asphalt top by eliminating the customary road forms and laying the slab full 24 ft wide in one pass. The contractor is the first to admit that his new machine is not perfect. Yet, he believes already it is satisfactory for concrete base work, and he predicts improvements are possible for applying it to full slab operations.

Though crawlers provide the traction power, the slip forms skid on the carefully prepared base. Thus, control of slab profile passes from road forms to subgrade, requiring its precise preparation. Concrete mix must be carefully controlled, too, to hold the right slump. But these are minor considerations—already largely in effect—in light of the greatly improved efficiency and elimination of the high cost of installing, pulling and moving road forms.

The slip form paving machine shows promising progress for concrete paving operators.

All Hail the Tracks!

Just 50 years ago this year the first practical application of crawlers was made to the old steam tractor—an event far more significant to construction than those old pioneers ever dreamed. Because its parent companies—Best and Holt—developed the crawler track to the practical stage, Caterpillar Tractor Co. is proudly celebrating "50 Years on Tracks" this year.

It is hard to imagine what construction operations—especially earthmoving—would be like today without crawler-mounted equipment. Shovels, cranes, wagons, draglines, ditchers and bulldozers on crawlers have literally changed the face of the world. They have built America into its present industrial might. They have helped her to win two world wars. They have preserved and developed our great natural resources. They have turned ravaging floods into useful power. Verily, they have affected every walk of life.

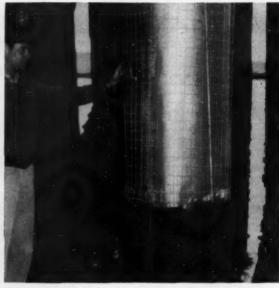
There's a young upstart about 25 years old called rubber that is pushing crawler tracks around. But we'll bet the old substantial crawlers will be seen on construction equipment for a long, long time.

All hail the tracks and what they have meant to America and the world!

Rich



THIS CLOSEUP shows a deteriorated pile and the unique jacket and Gunite used to form encasement for final cement pour.



JOHN QUACCIA, job superintendent, inspects sheet cylinder and wire mesh from around piling just before applying Gunite.

Timely and Low-Cost Repairs Save Deteriorating Piling



ONCE THE JACKET had been completed around the piling, con- THIS PILING has been completely encased below water line and crete was fed by gravity into the pile opening through this chute. Is being grouted prior to final placement of concrete.



ENCASING 175 WOODEN PILES which support docks along the channel for the Port of Redwood City, Calif., with a substantial coating of concrete was the \$45,000 contract awarded to Ben C. Gerwick Co., San Francisco.

Using a crew of 13 men and small equipment, but plenty of ingenuity, disintegration of the pilings was stopped and the completed job made fireproof and permanently protected against marine borers and dry rot.

The piles ranged from 12 to 20 in. in dia and in lengths from 15 to 40 ft, mud line to caps.

To get at the piles, the crew first cut an access hole in the wharf deck and floats. Ladders and miscellaneous tools were installed below or assembled in a wharf shed directly above the job site.

The piles were then cleaned with a weighted cable choker.

Then open cylinders of 5-ft lengths of 14-gage sheet iron 16 to 24 in. in dia, depending on the diameter of the piling, were wrapped around the piles at a point several feet below the caps. The cylinders were furred out for uniform clearance all around the piles.

Lightweight building paper was then stretched around the cylinders and fastened with gummed tape.

Steel Strands for Strength

A section of 12-gage, 2-in. galvanized wire mesh was next wrapped around the paper and secured. Unravelled strands of a steel cable were entwined vertically through the wire mesh to help support the weight of the form after applying the concrete.

With this economical jacket complete, a mixture of 3-to-1 sand and cement was applied by the Gunite method, completely circling the jacket.

After the cover had cured, the resultant concrete jacket was gently eased off the steel forming cylinders and lowered to a point close to the bottom of edge of the form by hand winches.

After the jacket had been lowered, the stationary steel forming cylinder was again encircled by paper and wire mesh and the Gunite operation repeated, establishing a bond between the new and earlier segment.

The result of these operations produced a continuous, cast-in-place concrete sleeve or slip jacket completely encircling the piling.

Once the jacket had reached bottom and settled into the mud, con-



WORKING ON RAFTS, workmen directed concrete against form to continue process of building up sleeve or slip jacket around pile. When the Gunite has been placed and cured, it was lowered by deck winches and the building cycle repeated until form was complete.



HERE'S A VIEW of the completed job. The 175 wooden piles supporting the docks for the Port of Redwood City, Calif., now have a substantial coating of cement and are fireproof and permanently protected against marine borers and dry rot.

crete was fed by gravity into the opening between the form and the piling, resulting in a concrete piling with a wooden core.

The above method was used to treat piles continually immersed in water. Piles exposed at low tide were treated directly. John Quaccia was superintendent on the job with Frank Smith as foreman.

Using this method, the entire project was completed without any interruption or interference to shipping or transfer of wares over the waterfront.

Mechanized Slab Handling Cuts Roof Cost

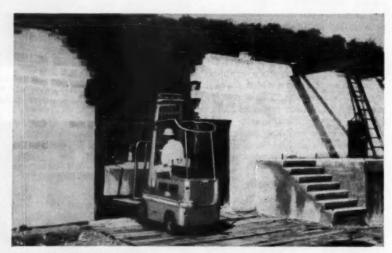
CAREFUL COORDINATION between purchasing and erection departments helped E. I. du Pont de Nemours & Co. reduce by 30% the cost of installing precast concrete roof slabs for an addition to its Pompton Lakes (N.J.) Works. By having the slabs delivered on flat cars in bundles, they could be handled by fork trucks to minimize hand labor. In addition, slabs were ordered to be delivered on a given time schedule and in a given sequence to correspond with erection, so no storage nor rehandling was required.

Slabs were 2x6 ft by 3¾ in. thick and weighed 200 lb. Normally they are shipped in a box car, unloaded individually by hand to a truck, moved to the building, unloaded, and raised to the roof by hoist or crane. Cost of movement from box car to place runs about 20c per sq ft.

To find a way to cut this cost, H. S. Freeman, purchasing agent for du Pont's construction division at Pompton Lakes, met with field supervisors early in the job. The method they devised, which reduced erection costs by 6c per sq ft, is shown in the photos.



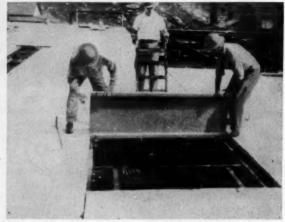
1 PRECAST CONCRETE SLABS are delivered on flat cars, bundled in groups of ten with two 11/4-in, steel straps. Method requires more dunnage than normal shipment in box car, but cost was offset by vendor's loading slabs with fork truck rather than by hand.



4 OPEN DOORWAY with spandrel wall left out provides access to building for Clark lifttruck delivering bundle of slabs. It takes only about 10 min for machine to take bundle from flat car, move it to building and place it on roof—or just 1 min per slab.



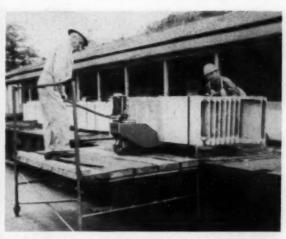
7 HAND-TRUCK moves slabs to place on roof. Because bundles are spotted near where slabs are used, this haul is short.



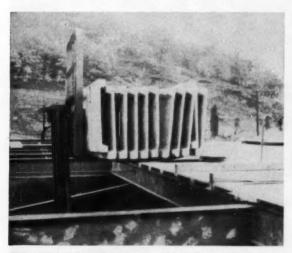
FINAL PLACEMENT of slabs is done by hand. When all are set, they will be covered with built-up roofing to complete job.



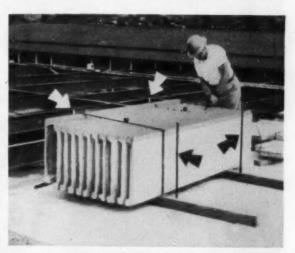
2 FORK-LIFT TRUCK, a Clark unit, removes bundle of slabs from car for delivery to building across street. Bundles were put on 4x4-in. skids for shipment, so fork can pick them up easily.



PALLET JACK shifts next line of 1-ton bundles across car to within reach of fork truck. Typical precast roof slab is 2 ft wide, 6 ft long and 3¾ in. thick. Each weighs 200 lb.



5 HIGH LIFT of fork truck puts slabs 13 ft up on roof of onestory steel-frame manufacturing plant. Bundle will be set on two 4x4-in. timber skids near slabs' final location in roof.



6 STEEL STRAPPING is cut after fork-truck has landed bundle on skids. Four vertical steel rods (arrows) placed in holes in 4x4s prevent slabs from toppling when bands are snipped off.

Jet Pilot

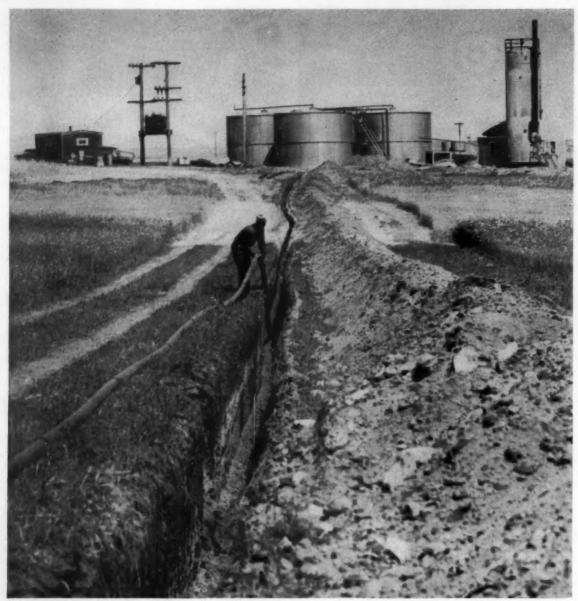
IT'S A LIFE OF EASE for the pilot who controls this monitor's 800-gpm, 125-psi jet at La Joie Dam in British Columbia. His single "joystick" operates a

four-way valve to two double-acting hydraulic rams that move the 3-in. nozzle in all directions. Water for ram operation is bled from the supply pipe to the monitor.

Northern Construction Co. & J. W. Stewart Ltd., Vancouver, designed six of these setups to settle the dam's rock fill. Sluicing water is supplied by four Byron Jacks on six-stage centrifugal pumps, each rated 1,200 gpm at 165-ft head and driven by a 125-hp U. S. electric motor.

The four pumps feed a single 1,500-ft header of 14-in. pipe with Victaulic couplings. From this, 8-, 6- and 4-in. branches lead to the 3-in. nozzles.





PIPE IS LOWERED into 5-ft ditch by one man laying it in long xig-zags across the 2-ft bottom to permit expansion and contraction of the Tenite butyrate plastic. Storage tanks in rear receive crude

oil from several wells in the field where the pipeline starts. Two men dug 10-mi ditch with a trenching machine and one man covered pipe with a motor grader.

Two Men, One Boy Lay Ten-Mile Plastic Pipeline

TEN MILES of 3-in. pipe, joined and laid with only a wheelbarrow-full of equipment by two men and a boy, was put down in Montana recently in five days at a saving of 25% in cost over conventional pipelining methods.

Key to the fast-moving, low-cost operation was the use of plastic pipe—its light weight and ease of connecting, eliminating the need for many skilled workers and the big equipment normally associated with steel pipe. The over-all cost of the 52,300-ft line was a shade more than \$75,000. The owner estimates that a comparable steel line would have cost approximately \$100,000.

The plastic line is in service transporting crude oil from the Fort Peck Indian Reservation to loading



PIPE in 20-FT LENGTHS arrived six to a carton, was dropped off truck at proper intervals. Truck carries one mile of pipe.



BOY CARRIES 20-FT PIPE, which weighs only 13 lb. He opened cartons and distributed pipe along the right-of-way.



TWO BUCKETS of solvent and solvent cement, and two brushes are only materials needed to join butyrate plastic pipe lengths in a permanent bond inside a slip-sleeve coupling.



START OF THE LINE is right in the shadow of the oil field storage tanks. Special flange adaptor connects plastic line to steel pipe. Three 7½-hp pumps supply the line pressure.

docks of the Great Northern Railway near Poplar. C. C. Thomas, lessee of the producing wells, had been paying 22.5c per bbl to have the oil trucked to the railhead. He contracted with Plastic Service Lines, Inc., Denver, owner of the new pipeline, to have it delivered for 10c a bbl.

Luther Symons, vice-president and treasurer of Plastic Service Lines, states that the saving comes mostly in labor costs. Symons, R. W. Greene of Casper, Wyo., and 14-yr-old Dick Thomas, son of the oil operator, made up the pipelaying crew.

The 3-in. (I.D.) pipe has sidewalls ½ in. thick. It is extruded by Johnson Plastic Corp., Chagrin Falls, Ohio, from pure Tenite, made by Eastman Chemical Products, Inc., Kingsport, Tenn. It was shipped to

the job in 20-ft lengths (weighing 13 lb each) packed six to a carton. One truckload contained a mile of pipe, was loaded in approximately 15 min.

Unloading and proper pipe spotting were a cinch. One of the truck tires, 10 ft in circumference, was marked with a colored stripe. On every 12th revolution counted by Symons aboard the truck, he shoved a carton of pipe to the ground. Young Thomas opened the cartons and strung pipe lengths along the right-of-way.

Because of the severe Montana winters, the pipe was laid in a trench 5 ft 4 in. deep. Its 2-ft width was specified to allow for expansion and contraction of the plastic—which was snaked from side to side in 200-ft intervals. The ditch across the rolling plain was

dug by a trencher and filled in by a motor grader.

No public road was closed for more than 30 min due to the fast-moving method. At one point the pipe is 14 ft below a county road traveled by heavy trucks. Some flattening of the plastic was expected, but a simple check revealed no distortion. Symons pulled a tin can slightly smaller than the pipe bore through the pipe. It slid through easily, denoting no appreciable egg-shape.

Probably the biggest problem came while pushing the line under railroad tracks and a major highway. State law requires steel conduit for pipelines under railroads and state highways. And the conduit must be sealed at both ends around the pipeline. Requirements were met by installing the plastic

pipe inside a slightly larger steel casing. Conduit ends were sealed by building up the diameter of the plastic pipe with split sections of Tenite cemented around the pipe and then calked tightly against steel connecting flanges welded to the outer casing.

Pipe sections are joined with plastic slip-sleeve couplings and a special solvent and cement. An ordinary hand saw was used to cut pipe to fit, where necessary.

The line starts at an elevation of 2,090 ft above sea level and terminates at the railhead at 1,940 ft. In between is a high point at 2,100 ft. Pipe lengths were joined on the bank and then laid into the ditch by one man.

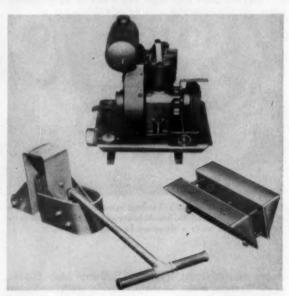
Although the Butyrate-type pipe is light in weight, it will take considerable abuse. While laying, it became necessary to move a 300-ft section to another point some 4 mi away. One end of the section simply was fastened to the back of a truck and the 300-ft length dragged to location, none the worse for wear. One night a horse dropped into the ditch on top of the uncovered line and scrambled around until morning. Only the surface of the pipe was scratched. It resists corrosion by gases and is not attacked by rodents.

Symons reports that the inner surface of the Johnson plastic pipe is so smooth and friction-free that a 3-in. bore will carry the same volume of fluid as a 4-in. steel pipe. It is estimated to have a capacity of 4,000 bbl daily, normally is used to deliver 2,500 bbl of crude per day, with only one or two small pumps working.

Packaged Screed Lets Contractors Build Their Own



ONLY TWO OPERATORS are necessary to work this packaged vibrating screed. With one pass the surface was smooth.



HERE ARE THE PARTS of the vibrating Screed Package being offered to contractors who wish to build their own screed.

STOW MANUFACTURING COM-PANY, Binghamton, N. Y., announces an improved version of its vibrating screed and is offering it as a packaged unit in the hopes of attracting contractors who want to build their own vibrating screed.

This package includes a Power-

Pak, which consists of a 2-hp Briggs & Stratton gas engine and a built-in vibrator. The engine unit is mounted on a multi-plane base, fitted with four vibration dampers to isolate the engine from the screed's vibration. The engine has a throttle control which can be used

to vary the frequency of vibration from 3,600 to 4,800 vpm.

The package also includes a pair of end rollers complete with shoes, handles and deflectors.

Contractors can use their own beams or obtain them in lengths from 7 to 31 ft.

Pins Welded To Big Ball Hold Insulation

A QUARTER MILLION steel pins, 2½ in. long, are being welded to the bare outer surface of a 225-ft dia steel sphere nearing completion at the Knolls Atomic Power Laboratory, operated by the General Electric Co. for the AEC near West Milton. N. Y.

They are secured to the big globe in rapid-fire fashion by six men armed with six semi-automatic Nelson stud-welding guns. Power for the fast arc-welding operation comes from three Nelwelder battery units on the ground below. As the welders move over the sphere, cable lengths up to 350 ft are required to service the guns. The little headless studs hold a layer of 2-in. Foamglas insulation blocks.



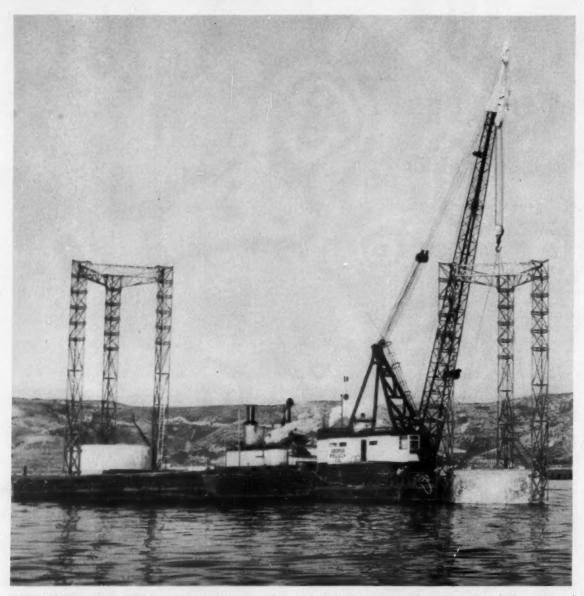
IT'S A BIG BALL (225 ft dia) and takes a lot of cover. But men can't walk over a rounded surface like flies, so they use an extensive spread of Safway scaffolding to finish welding of the 682 steel plates in the sphere, apply insulation and a final outer covering. The 128-ft Safway hoist tower has a unique arrangement of lower pulley assembly that transfers loads to the tower base of two I-beams. See also page 44 for more scaffolding details.



NELSON STUD WELDING GUN, powered through cable from a Nelwelder battery on the ground, fastens 21/2-in. insulation studs as fast as the 5-lb unit can be loaded and triggered. Insulation is Installed from the top down on the big sphere, which will be used to test a prototype power plant for nuclear-powered submarines.



FOAMGLAS BLOCKS are impaled over the welded studs and "speed clips" applied to hold them down. Tips of studs are nipped off clean with a wire clipper. A coat of insulmastic precedes the Foamglas and a second one is placed on top of the insulation. It is followed by glass fabric and a weather coat of insulmastic.



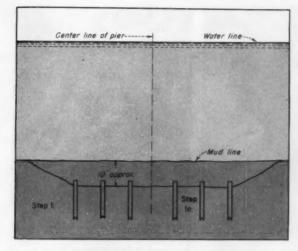
BOTTOM SHELL, with protruding reinforcing rods, is suspended from a three-legged steel handling tower as it is lowered 50 ft below the surface to the concrete grid acting as a pile-driving templet on the bottom of the bay. Accurate positioning of shells is possible with guide plates cast into the grids. A diver checks position and calls directions as the steam-powered crane lowers its load. A second, resting on the barge, will be lowered alongside to create a twin-legged pier.

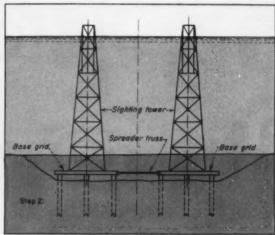
Assembled Under Water Precast Shells Become Bridge Piers

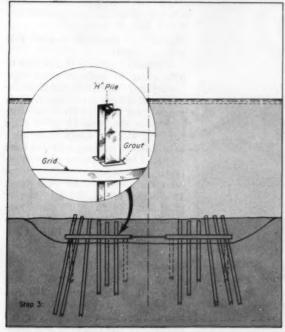
By L. L. WISE, Associate Editor

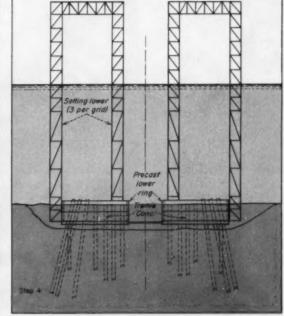
UNDERWATER ASSEMBLY of precast concrete shells and filling them with tremie concrete for piers to support the Richmond-San Rafael Bridge across the north arm of San Francisco Bay is a well-organized operation. Substructure contractors, joint venturers Ben C. Gerwick, Inc., and Peter Kiewit Sons' Co., are erecting these deep-water piers with precast cones and tubes (see CM&E Dec. 1953, p. 50).

The 4-mi vehicular bridge calls for 79 piers, 62 of them deep-water bell-bottom types. Nine of the larger ones are being constructed with steel forms to hold the underwater concrete. The remaining 53 are built up almost entirely of precast concrete shells—which serve as outside forms and are filled with tremie concrete to make a solid pier structure.









STEP-BY-STEP sketches illustrate underwater operations in sequence. Ten ft of mud are dredged from bottom before timber falsework piles are driven and cut off at grade. Then two precast base grids are set on adjacent timbers and tied securely with a spreader

truss after having been positioned accurately with the two loweringsighting towers. Next, steel H-piles are driven and grouted to the grids. Step 4 shows bottom shells and tremie concrete in place. On top will go long cylinders, filled with concrete.

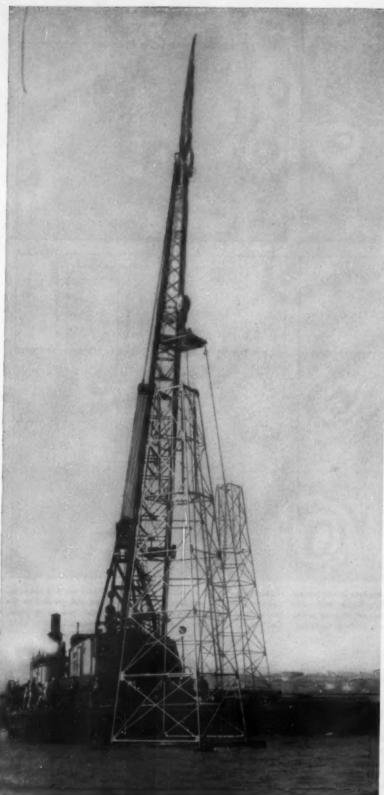
Experience in constructing piers with this method was gained by Contractor Gerwick last year while setting big piers for heavy electric transmission towers across San Francisco Bay (CM&E Mar. 1953, p. 60).

• Piles driven first—Profile of the Bay bottom varies widely along the bridge route. At some points rock is near the surface. But, generally, the mudline is at a 40- to 50-ft depth and rock (sometimes firm sedimentary strata) is 140 to 150 ft below that. This means that all the deep-water piers must be pilesupported. And the plans require that the piles be driven through a templet to assure proper positioning.

In this instance the contractor elected to use a concrete templet rather than the more common timber templet. This concrete grid is heavily reinforced, is 12 in. thick, and has H-slots in it for pile positioning. The grid serves as a bottom form for the tremie concrete that is poured to form the bulk of the pier and also as a seat for the lower shell sections.

First construction step was to excavate a 10-ft depth of mud. Then timber falsework piles were driven to support the concrete grids. The piles are cut off to proper elevation by an underwater saw operating from barge-mounted telescopic pile-driver leads.

Grids are set in pairs, connected by a steel spreader truss. The truss holds relative position of the disks both in the placing procedure and during pile driving. Mounted on each grid is a steel pipe cage with a centering mast for precise alignment of the units. These



GRID LOWERING is done with special four-point bridle on crane hook and cables down to rectangular lift frame across grid (just entering water). Steel tower on grid is not used for lifting, but becomes sighting tower appearing above water so that grid on the Bay bottom can be positioned correctly. A second grid and tower are on barge at right.



DIVER GOES DOWN to check a phase of underwater assembly. Divers work at about 50 ft, need no decompression chambers.

towers are removed before pile driving begins.

Piers vary greatly in size due to differences in weights to be supported and the number of piles for each bell differs accordingly. Bells range from 14 to 34 ft in diameter and there are from 15 to 77 piles per bell (14-in., 89-lb H-sections calculated to support a 60-ton normal load in hard strata or 100 tons under earthquake load). Some piles are plumb, others on a slope. The batter is 2 in 12 for interior piles and 3 in 12 on the outer circumference. Number of plumb piles varies from 40 to 70% of the total under each pier leg.

Piles and Grout

Vertical piles are driven first to anchor the grids in place and also to establish the length of other piles. Then tremie grout is introduced into the space between the pile and the H-slots in the grid. Purpose is to provide bond between pile and grid, as well as to retain the tremie concrete. This gives support to the structure beyond that provided by the timber falsework piles. And it is a safety factor in case batter piles are driven through the timber piles. Tests made by the contractor have shown that the bond formed between the grout, piles and grid is stronger than the grid itself. Next, the batter piles are driven and grouted. Grouting of the batter piles provides additional support and an added safety factor.

Piles are delivered to the work on a surplus LSM converted into a barge. The two drivers on the job have 120-ft stationary leads with 120-ft telescopic leads. They are said to be the largest floating drivers on the West Coast (CM&E Oct. 1953, p. 57).

A pile is lowered to within a few feet of the grid and a diver sent down to "talk" the barge into exact position. Once the pile has been introduced into the slot the diver surfaces and the pile is driven. From 15 to 40 min are required to drive each pile.

• Hollow concrete shells—Next to go down are the hollow concrete bottom shells 9 ft high. The shells are positioned by guide plates cast into the grids; however, a diver checks exact position as the units are lowered.

Each bottom shell is handled by three tubular steel towers extending above water. These towers are also used to position and brace following concrete elements. The steel towers, by means of cross trusses at the top, also support tremie pipes for concrete placing.

After the bottom shells are in position, a 5-ft thick lift of tremie concrete is poured. This bonds the structure to the H-piles for positive support of the rest of the pier as it is built.

Additional text, sketches and photographs, to complete the construction story of these deep-water piers, will be published in the April issue.—Ed.



CRANE HAS LINES to towers on top of grids now resting on the bottom. These are small ones, easily adjusted for alignment as they are sighted by man on top of temporary tower in the foreground. Piers vary greatly in size according to loads to be carried.

Engineer Corps Promotes Interchangeability

NO, YOU'RE NOT seeing things. The dozers and winch attachments that seem to be on the wrong make of tractors are there for a good reason.

This photograph shows an International TD-18A, Caterpillar D7, and Allis-Chalmers HD-15, each mounting dozer and winch attachments interchangeable among the three. Knowing that it can be done should make contractors happy.

Interchangeability of attachments has been accomplished at Ft. Belvoir, Va., by the Corps of Engineers, U. S. Army, Engineer Research and Development Laboratories, working in cooperation with members of SAE, CIMTC manufacturers.

Reason for this project, according to the Army, is that the Armed Forces utilize large quantities of tractors of this size and interchangeability of attachments will



aid materially in keeping a maximum number of units in operating condition.

The blades interchangeable are: Gar Wood, Bucyrus-Erie, Caterpillar and Pullman Standard.

Rear-mounted cable control units used are Caterpillar, Gar Wood, Bucyrus-Erie and Hyster. Baker hydraulic controls also are used.

Ease of Maintenance . . .

Army Style

Engineer research and development laboratories personnel, Corps of Engineers, U.S. Army, at Ft. Belvoir, Va., are keenly interested in ease of maintenance. They have learned by experience that a machine out of service, even for one hour, may mean success or failure in accomplishing assigned missions where human lives are involved.

The Army is constantly seeking new ways to eliminate adjustments or repairs, but when they have to be made, they are to be done positively quicker and better.

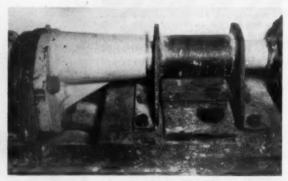
Designers of earthmoving equipment have learned to watch the activities of Ft. Belvoir with more than casual interest because equipment can be improved for the commercial user by adapting some of the techniques developed there.

Here are some of the Army's ideas and improvements recently developed for the Caterpillar D7 tractor and the Austin-Western 99 motor grader.

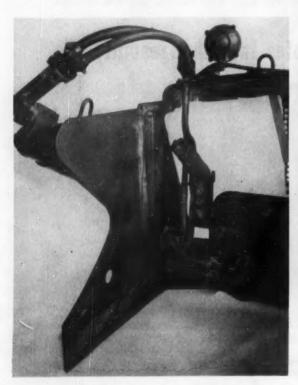


The DC Tractor ...

The track on any track-type tractor must be maintained in proper adjustment. At present to get this adjustment (above), it is necessary to use a large track-adjusting wrench, augmented by a large pipe for additional leverage. A cover plate with three cap screws must be removed before the adjusting nut can be reached.



Three tools are necessary to do this job: (1) a 1½-in. wrench; (2) a 2½-in. wrench, and (3) a 4-ft. pipe. The Army has eliminated all this by substituting the Hydrajuster (above), or a similar device which permits adjustment with a standard grease gun. The army reports exceptionally good results with such devices.





Tractor Hydraulic Unit ...

In order to remove or repair the radiator or to work on the hydraulic unit of the D7 tractor, it was necessary to remove the complete hydraulic assembly with its various components, it was also necessary to remove the hydraulic components when removing the engine. This required draining the hydraulic system, with the loss of fluid, or contaminating it under field conditions. Simply by re-routing the hydraulic lines, as shown in photo at left, the hydraulic cylinders, tank, hose and pump can be removed as a unit to provide quick access to engine and radiator.

Another simple change made on the D7 tractor was to hinge the two-piece radiator guard. Formerly it required three men to remove or place this guard in position. Now one man merely swings it open.

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Steering Clutch Adjustment ...

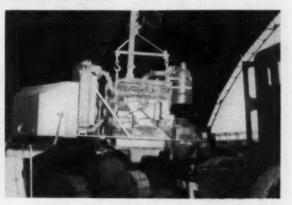
Considerable difficulty was also experienced in making steering clutch adjustments and removal of the unit. The former method necessitated seat and fuel tank removal, usually with small crane and labor of two men. Now a dowel arrangement is used to locate the tie-down holes, plus a small pedestal to hold seat in raised position to provide easy accessibility for steering clutch adjustments. Hinges are to be instelled on the front bottom edge of the seat which will improve maintenance still more.



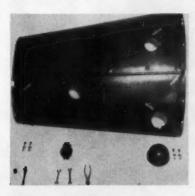
Motor Grader Modifications



Modifications of the Austin-Western 99 motor grader now permit engine and radiator to be removed by three men, plus a small standby crane, in the record time of 3 min and 5 sec (two photos above).



Ordinary time for the removal job after modification is 30 min, as compared with almost 4 hr by the old method. It can be re-installed in as little as 5 min, but average time is less than one hour.



Before Modification ...

To remove the engine and radiator it was necessary to

- (1) Remove hood held in place by 13 cap screws
- (2) Drain, disconnect and remove the radiator
- (3) Disconnect hydraulic pump lines and PCU
- (4) Disconnect engine controls, fuel lines and electrical connections
- (5) Place a rope sling or special fitting adaptor and remove the engine.



Modifications Included ...

- (1) Relocation of air cleaner and gesoline tank from the firewall to the engine with necessary changes in the engine hood for accessibility (far left).
- +
- (2) Providing mounting rails and lifting eyes so that the radiator, engine and clutch can be removed as a package unit without draining the cooling system





- (3) Providing quick disconnects for fuel and hydraulic line and electrical connections.
 - (More Photos on next page)

Motor Grader Brake Drum Modification





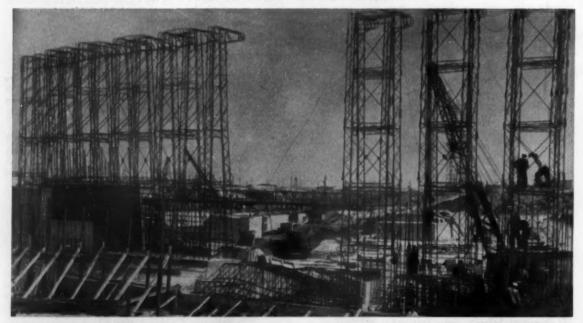


The brake on the Austin-Western 99 motor grader is located aft of the trensmission on the drive sheft (see photo above). To remove it for repair, it was necessary to remove four cap screws inside the brake drum, holding the universal joint (top photo) bearing assembly. These cap screws were reversed and screwed into tapped bushings provided in the brake drum (upper right). Savings—2¼ hr.

Man-Hours Before and After Modification MOTOR GRADER

Man-Hours Before	Man-Hours After	Man-Hours Saved	Reduction %
3.8	.5	3.3	87
4.1	.8	3.3	80
.1	.1	0	None
1.0	1.0	0	None
7.6	1.6	6.0	79
11.7	2.4	9.3	79
2.0	.9	1.1	55
2.1	.6	1.5	71
3.3	.5	2.8	85
2.9	.4	2.5	86
	3.8 4.1 .1 1.0 7.6 11.7 2.0 2.1 3.3	8 efore 3.8 .5 4.1 .8 .1 .1 1.0 1.0 7.6 1.6 11.7 2.4 2.0 .9 2.1 .6 3.3 .5	Before After Saved 3.8 .5 3.3 4.1 .8 3.3 .1 .1 0 1.0 1.0 0 7.6 1.6 6.0 11.7 2.4 9.3 2.0 .9 1.1 2.1 .6 1.5 3.3 .5 2.8

Construction in Russia



TOWERS OF REINFORCING STEEL—Detailed information on this project is not available but the Soviets, who supplied the picture, claim that it is the construction of a large hydroelectric plant on the Dnieper River near Kakhovka. It appears that workmen first erect steel in tower formations then tie in additional bars around the vertical members. Wood forms for concrete

rise around the steel at left. The Communists claim to have poured about 1,000,000 yd of concrete on this site this year and talk about "the biggest automatized concrete-making plant"—whatever that means. No details are given. A cableway was to be erected for concrete and materials delivery at a later date. Method of concrete pouring so far has not been revealed.—Sovfoto

Big Red Power Play Scores Against the Weatherman

An Actual Job Report from





















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Meet the man they call "LUCKY"



Here's Paul Crawley, 32-year-old contractor from Edwardsville, Illinois and Clayton, Missouri. He currently (October, 1953) is working on five major levee contracts with the U.S. Army Corps of Engineers, totalling approximately 2,900,000 yards of dirt and \$1,300,000.

Paul says, "Yes, I know they call me 'Lucky', but you need more than luck to make up nine weeks lost by rain and floods! We made up that time in a little more than three months. We did it with a team of top operators and mechanics who used the right equipment for the job we had to get done.

"My four TD-24 tractors showed their true

worth when they kept right on working in the rain, climbing slippery levee slopes with heaping scraper loads...a job that caused our other tractors so much trouble we had to use them elsewhere. In one clocked 13 day period, we moved 197,700 cubic yards of dirt. TD-24 performance was a tremendous factor in helping us set this record."

By using the best in earthmoving equipment, by hedge-hopping in his two planes and by using a powerful FM radio with two-way phones in all his superintendents trucks, Paul not only kept this project rolling—he made the dirt fly on four other levee jobs at the same time!

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TD-24 crawler with matched scrapers



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TD-14A crawler with cable bullgrader



TD-9 crawler with hydraulic bulldozer



T-9 crawler with hydraulic bullgrader



TD-6 crawler with hydraulic bulldozer



T-6 crawler with hydraulic bullgrader



Model 2T-75 two-wheel, rubber-tired tractor with 18 heaped-yard capacity scraper



Model 2T-75 two-wheel, rubber-tired tractor with 20 heaped-yard capacity bottom dump wagon

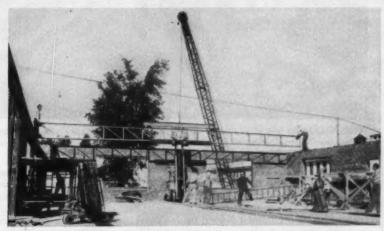


Model 2T-55 two-wheel, rubber-tired tractor with 13 heaped-yard capacity scraper



Riding the second floor of a building inaccessible to a crane, this ...

Fork Truck Erects 50-Ft. Trusses

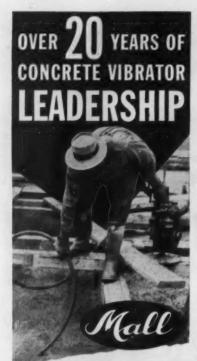


TRUSS IS TRANSFERRED to fork truck by crane whose spreader beam supports long (50-ft) shallow (32-in.) truss at two points. Planks distribute truck's weight on second-floor slab.

JUST FIVE HOURS—that's all the time it took a Clark fork truck to erect 26 roof trusses for Moorman Manufacturing Co.'s new two-story cafeteria and stockroom. The Quincy (Ill.) feed producer made the trusses in its own shop and erected them with plant forces in a simple operation.

Why the erection with a fork lift instead of a crane? A steeply pitched site plus a 20x30-ft entrance extension on one side of the 50x130-ft building made crane access extremely difficult, if not impossible.

The all-welded trusses (50 ft long, 26 to 32 in. deep and weighing 1,900 lb) were stock-piled 25 ft from one end of the building. An Insley crane with 40-ft boom would



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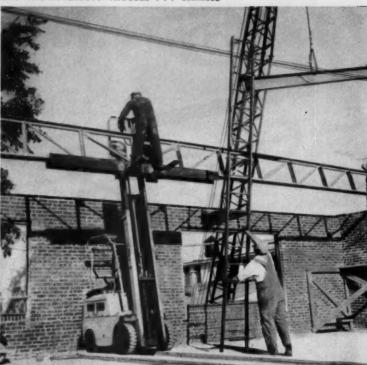
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LIFT TRUCK ERECTS TRUSSES . . . Continued



TRUSS IS FASTENED by chain to frame of lift for safety during move. Truss rests in trough between flanges of 10-ft beam that is held to truck's forks by U-shaped brackets.

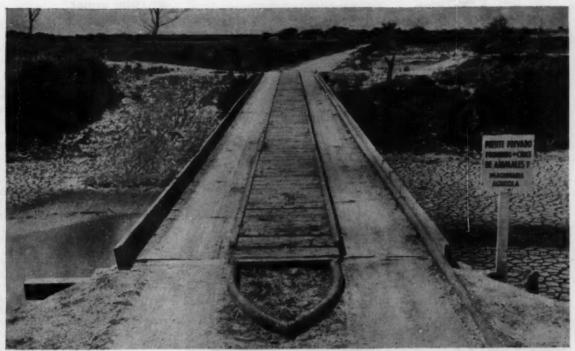


TRUSS IS LANDED in final position on bearing plates atop second-story wall, and is unchained from lift truck. This now will go back to other end of building to get next truss.

transfer a truss to the lift truck waiting at the end of the second floor. Then the Clark machine, whose forks were fitted with a transverse steel beam 10 ft long to support the 50-ft truss, moved down the floor to place the unit

gently on its wall plates. Men walking the wall helped balance and guide the truss during this operation.

Total time to erect each truss was 12 min, and the entire job took just 5 hr.





as Clear Span bridging a canal in Mexico. It is made up

THESE TWO VIEWS show the 120-ft new type of bridge known of hermetically sealed box girders fabricated from steel plates. The bridge has unusual strength characteristics and is easy to erect.

New Type of Floating Bridge

THE INVENTION and development of a new type bridge known as the Clear Span, first seen in miniature model form at the recent Oil Exposition Show, is now an actuality in the form of a 120-ft structure across the Ratamal Irrigation Canal in Tamaulips, Mexico. Its unusual design could very well influence the future planning of bridge designers.

Invented by a Houston, Tex. engineer, Weldon F. Appelt, the principal features of the bridge are its unusual box girders, its lack of heavy steel structure over or under the bridge span and the length of time required to erect it.

Another item worth noting is the fact that the completed box girders actually float in 2 ft of water which permits several of the girder units

to be tied together and floated to erection location. Even after erection, they can float away, too, but the interesting point is they float away and don't sink. This actually took place in a flash flood recently in Mexico. Several oil field workers spotted a girder floating downstream and pulled it to shore with a cable. When the flood finally (Continued on next page)



Building a Reputation

In construction, perhaps more than in other fields, a man is known by his accomplishments. Let a contractor do an outstanding job and the word gets around — his reputation grows.

That's true of bonding companies, too. The reputation that the Ætna Casualty and Surety Company enjoys with contractors everywhere is the result of outstanding service to the construction industry.

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FLOATING BRIDGE . . . Continued

subsided, they merely hooked it on to a truck and towed it back to its original site. There it was put back into place apparently none the worse for wear.

The original bridge across the irrigation canal is 120 ft long. It was fabricated by the Portable Bridge & Equipment Co. of Houston. It has been tested and used enough to declare the design an outstanding success.

The bridge itself is made up of hermetically sealed box girders fabricated from steel plates ranging in thickness from 5/16 to 1/2 in., depending on the strength requirements. The unusual strength in the box girder design comes from a unique and efficient reinforcing and bracing arrangement inside the girder, which spreads the loadcarrying action to all of the crosssectional area in the steel plates and structural shapes. This arrangement differs from conventional trusses and girders in most bridges because a large percentage of their weights is in splices, rivets, stiffeners and reinforcing plates.

Girder Lengths

To get additional strength in the Clear Span bridge the depth and shape of the girder section is merely changed.

The girder sections are most commonly manufactured in 30and 40-ft lengths. According to the manufacturer who offers this interesting comparison showing the relative economy and strength values of this bridge design with a conventional highway-type bridge, the weight per lin ft is 200 lb less. The conventional highway bridge supported by two plate girders over an approximate span of 100 ft would weigh around 1,100 lb per lin ft. This is based on an H20S16 loading and represents a 40,000-lb truck pulling a 32,000-lb trailer, one in each lane.

The Clear Span bridge, supported by two box girders over an approximate span of 180 ft, reveals the weight of these two girders is only 900 lb per lin ft for the same loading. According to this analysis, the new type bridge can span almost twice the span of a conventional bridge with 20% less steel.

The Clear Span bridge can be quickly erected. The installation of the one in Mexico required only 15 men, including non-skilled laborers, and 2½ days to erect.

Another advantage claimed by (Continued on page 78)

Do you have trouble sawing these materials?

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3 Heavy-Duty tow-Cost SKIL Builders Saws with high blade speed. The new SKIL Builders Saws are ideal for quick cut-off work and for use with SKIL abrasive cut-off wheels. Blade diameters: 6", 714", 84".





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YOUR CHOICE OF THREE RETICULES AS SHOWN BELOW ---



Fig. 1 Cross hair errangement for our standard



Fig. 11 Stadia hair errangement for our standard



Fig. 111
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hair arrangement
furnished
upon request.

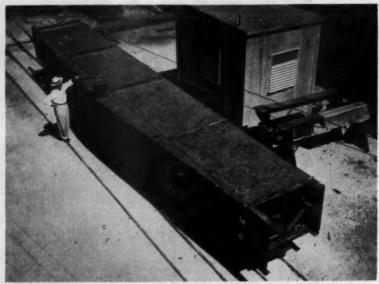
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FLOATING BRIDGE . . . Continued from page 76



INVENTOR of the new type of bridge, Weldon F. Appelt, is shown here examining a completed 40-ft center section of a new bridge to be erected at Weslaco, Tex.



SPECIAL FEATURE of the internal bracing of the Clear Span Bridge is pointed out by Mr. Appelt. This section is being fabricated by the Mosher Steel Co. of Houston, Tex.

the inventor is that because the girder is hermetically sealed, it requires no special corrosion-resisting coating on the inside; therefore, paint maintenance costs are less.

The Clear Span bridge may be easily strengthened to carry twice the original design loads with approximately 25% increase in costs without taking the bridge out of service—something that cannot be accomplished with bridges of conventional design.

This type bridge construction should be interesting to major construction firms and oil field operators because of its ease of erection, and the fact it can be dismantled, moved and installed at another location without too much difficulty.

Another Clear Span bridge, the Mid-Valley International bridge, has been constructed over the Rio Grande near Weslaco, Tex. The Clear Span sections of this bridge span the main bank-to-bank part. General contractor on this 625-ft structure was Austin Bridge Co. of Dallas, Tex., and it was fabricated by Mosher Steel Co. of Houston, Tex.

LOOK REAL CLOSE and you can see the 4-ton Schield Bantam truck crane perched on top of this 40-floor Republic National Bank building in Dallas, Tex. The unit makes 30 lifts per day hoisting from 1,250 to 4,000 lb per lift.

Truck Crane Works From 40-Floor Level

PRODUCTION of a 4-ton Schield Bantam truck crane has reached a new high in Dallas, Tex., but this "high" is not at all what you might think. It is 40 floors up.

It all started when Farwell Company, Inc., a mechanical contracting firm of Dallas, was awarded the contract for plumbing, heating and air conditioning in the new Republic National Bank building in Dallas. This contract involves an estimated 2,000 tons of equipment and materials. The firm began looking around for a method to handle and hoist this equipment.

Using a boom with a remotely located hoist was found to be prohibitive in cost, as were similar methods. Finally, it was decided to use a truck-type Bantam crane, make a few changes and anchor it atop the steel structure.

M. G. Carter, engineer on the job, designed a square base constructed of I-beams on which the Bantam is mounted.

The American Bridge Co., with its guy derrick on the 40th floor, hoisted the crane partially dismantled, to the top of the building.

The Bantam is anchored on the southwest corner of the tower, 12 ft in from the extreme west side of the building, and 3 ft north of the south side of the tower. By placing the crane in this spot, it is possible to service the 8th floor wing, which will house the bank proper and also the entire tower, without the hazard of hoisting directly over any of the surrounding busy streets.

A special, single drum was built by the Schield

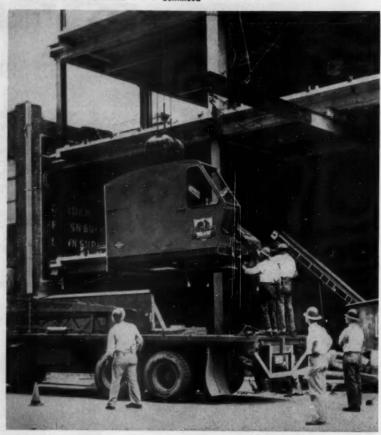


TRUCK-CRANE is a standard Bantam with a few modifications, such as a single drum with 600 ft of cable and a 30-ft boom, operating

on a 25-ft radius. It is anchored on a square base constructed of l-beams. The rig can lift as much as 4,000 lb.



MARLOW PUMPS . RIDGEWOOD, NEW JERSEY



CRANE WAS LIFTED in sections by a guy derrick on the 40th floor. Farwell Company, Inc., of Dallas, claims 75% savings in man-hours by using the Bantam over other methods.

Bantam Company, for the handling of over 600 ft of cable. It is equipped with a 30-ft boom which operates at a set radius of 25 ft. It is powered with a LeRoi engine.

The unit makes some 30 lifts per day, varying weights from 1,250 to 4,000 lb. To speed handling of materials, the company built two large skips or baskets from steel screen into which the material is loaded and hoisted to the desired floor.

Personnel on the project are enthusiastic with the results of using the Bantam crane in this unusual location. E. J. Bouffard, general foreman of Sheet Metal, believes he will be able to save at least 75% of the man-hours usually required by using this method. S. E. Ammons, project engineer, is well pleased with the over-all time saving on the large structure, which helps the work of all the trades.

Even though the crane is up in the air on this job in Dallas, good solid down-to-earth results have been obtained by slight modification of the unit, plus the ingenuity of the Farwell Company, Inc., of

Safety Service Guide Offered Free

THE NATIONAL SAFETY COUNCIL has a new Occupational Safety Service Guide that lists in catalog form the many and varied accident prevention aids available.

In the Service Guide, safety men will find help on the tools they need to build a safety program, plus the training aids available for instructing supervisors and workers. For the safety man, the 52-p guide offers periodical newsletters and a complete library of technical and administrative publications covering all phases of occupational accident prevention.

Copies of this Service Guide can be obtained without cost by writing the National Safety Council, 425 N. Michigan Ave., Chicago.



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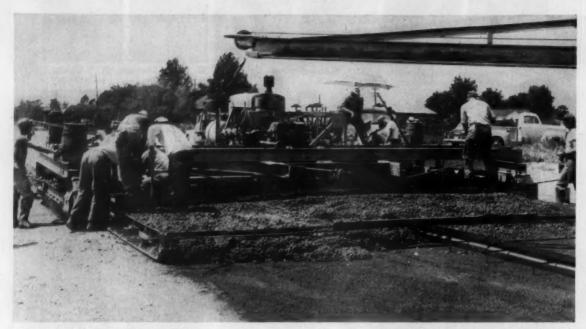


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CRAWLER-MOUNTED SLIP-FORM PAVER is fitted with two re- them. Forms, 29 ft long, extend ahead of rig to confine low-slump ciprocating transverse screeds and one vibratory screed set between concrete deposited on subgrade by Rex 34-E duel-drum mixer.

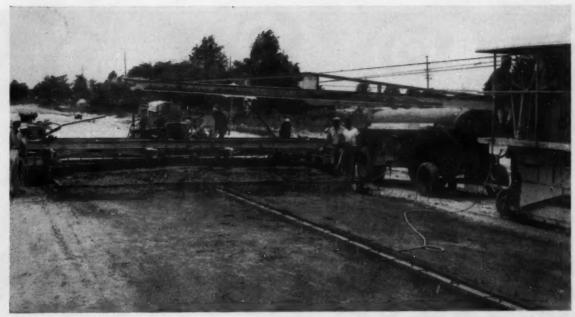
Self-Propelled Formless Paving Machine...



SMOOTH RIBBON OF CONCRETE 9 in. thick and 24 ft wide is left in its wake by new formless paving machine. Built by Regenhardt

Construction Co., Cape Girardeau, Mo., at cost of \$17,500, rig lays more than 100 lin ft of slab per hr on Illinois highway job.

... Lays 24-Ft Concrete Slab



SMOOTH STRETCH OF SUBGRADE finished to proper elevation is necessary if formless paver is to lay slab of correct thickness and at

correct grade. Machine has no difficulty working over centerline parting strip, can also handle reinforced slab.

ELIMINATION OF ROAD FORMS from concrete paving operations took a big step forward last season when Regenhardt Construction Co. laid 3½ mi of 24-ft slab 9 in. thick with a formless paver of its own devising. Crawler-mounted and self-propelled, the machine paved full width. And it handled with ease the output of a 34-E dual-drum mixer to lay better than 1,000 lin ft of slab daily.

Regenhardt built the machine for use on its \$743,000 job of grading and resurfacing 5 mi of Route 37 near Whittington in southern Illinois. Some 18,000 ft of this project was to be new 9-in. unreinforced Portland cement concrete base with a bituminous surfacing. State specifications for the concrete base said, "The work may be constructed using forms or without forms."

Big One Wanted

To take advantage of this latter provision, the Cape Girardeau (Mo.) construction company needed a formless paver that would give both a high rate of production and satisfactory results. It was decided that the machine would have to be self-propelled and of sufficient size and weight to handle the entire 24-ft width in one pass.

Furthermore, to move such a mass and maintain extreme accuracy of alignment and grade, crawlers would be the only tractive

CONCRETE MIX

(37.4 cu ft batch)

Cement	8.06 sacks
Sand	1,720 lb
11/2-in. Stone	1,410 lb
21/2-in. Stone	1,370 lb
Water	44 gal
Darex AEA	7 oz
Slump	2 in.
Mixing Time	60 sec
Entrained Air	4%

PAVING CREW

	Formless Paving	Paving With Form:
Operators	2	6
Oilers	2	2-3
Finshers	2	4
Laborers	5	18
Truck Drivers	_	2
Total	11	32-33

NOTE: Does not include batch plant or batch

power practicable. And finally, one vibratory screed, plus two reciprocating transverse screeds, would be necessary to insure proper strike-off and smooth operation.

Regenhardt's chief mechanic, William F. (for Frank) Merritt, followed these early decisions in building the formless paver. The machine is adjustable to handle slabs 18 to 26 ft wide and of any normal thickness. Total weight is 10 tons, and no additional ballasting is required for operation. All power comes from a 140-hp Waukesha gasoline engine.

The rig travels on a pair of 13-ft crawlers taken from a Parsons 310 Trenchliner ditching machine. The paver's two sliding forms, 29 ft long, were specially fabricated but are somewhat similar to standard steel road-form sections. A surface vibrating screed extends across the machine near transverse centerline. It consists of two 2x10-in. planks set on edge and carrying a Jackson electric vibrator in the center. Reciprocating transverse screeds are mounted 4 ft fore and aft of the vibratory screed.

In operation on the Route 37 job, the formless paver traveled down the prepared subgrade with its crawlers outside the edges of the slab. A Rex 34-E dual-drum mixer alongside dumped concrete (an airentraining mix with 2-in. average slump) between the slip forms ahead of the machine. As the rig advanced, the mix was struck off by the first reciprocating screed, consolidated by the vibratory screed, and finished to final grade by the second reciprocating screed. Behind it, the paver left a ribbon of concrete with vertical, non-slumping edges and with a surface whose smoothness was well within the

(Continued on page 86)



this dozer has all the angles!



This hydraulic angling blade is a great time saver. It angles to either side by hydraulic control from the tractor seat. Other blade attachments include—stationary angling blade, manually controlled angling blade, snew plow and hydraulic tilt blade.



An efficient front-end loader is another attachment that makes the tractor-dozer even more profitable. It attaches quickly and easily to a stationary mounting frame. Uses the same hydraulic system and control as the dozer. When it comes to figuring ways to cut costs and speed work, the Oliver "OC-3" tractor-dozer has all the angles. Why? Well, for one thing it's compact and turns on a dime. You get into places you can't reach with a larger machine...do many jobs formerly done by hand.

You have a choice of blades and a front-end loader for all types of work. Another thing, finger-tip hydraulic control gives you the down pressure and accurate adjustment you need to do a fast, clean job. And, you get the power and traction to work in any weather, any ground condition.

Here's another angle that's worth figuring—takes only a light trailer or truck to move the "OC-3" tractor-dozer from job to job. The fast, easy transport of this unit puts you in line for more work at distant points. Why not check this rugged, economical team for your work? A call or visit to your Oliver Industrial Distributor will put the tractor-dozer on your site for a demonstration.

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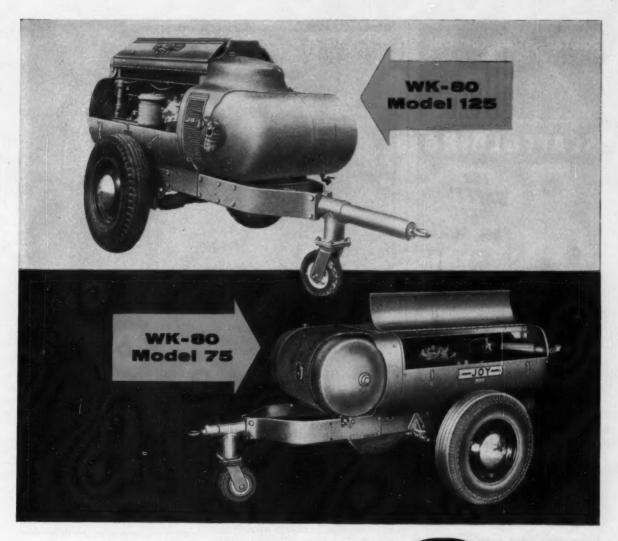
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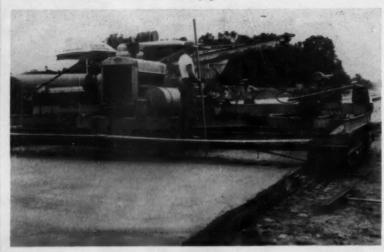
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FORMLESS PAVER . . . Continued from page 83



AT REAR OF MACHINE is mounted 140-hp Waukesha engine that powers rig, and Jackson generator that runs vibrator. Note how beautifully edge of slab stands up behind form.

specified tolerance of % in. on a 10-ft straightedge.

It was not difficult for the machine to maintain alignmentmaneuverability of the crawlers made it easy for the operator to match a wire pointer on one form with a string line previously staked on the grade. Proper elevation, however, was another matter. Because the screeds made the strikeoff directly from the forms, which slid along the subgrade, condition of this last governed the elevation and thickness of slab. All subgrade was prepared by motor graders, whose operators had to exercise extreme care to obtain minute accuracy. Two super-elevated curves were paved without trouble.

The formless paver performed with only minor breakdowns and minor adjustments throughout the project. The very first hour it was used it laid 75 ft of finished 9-in.x24-ft slab, and later it put down as much as 140 lin ft per hr. Best 10-hr day's production was 1,044 lin ft. But Regenhardt's president D. L. Harrison says, "We estimate that with full availability of concrete, the machine could satisfactorily process 1,500 ft of this slab per day."

Paving Crew Reduced

Paving crew was only 11 men, as against the 32 to 33 that Regenhardt would have needed with standard paving methods. A comparison is shown in a table on page 83.

Regenhardt's cost of building the formless paver was about \$17,500. This included design, standard

parts, fabricated parts, other materials and labor. The company has already filed patent papers on its machine.

On the Route 37 job, William M. Regenhardt was contractor's superintendent, and S. T. Wilson was resident engineer for the Illinois Division of Highways.

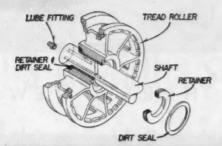
About Formless Paving

• D. L. Harrison, president of Regenhardt Construction Co., says:

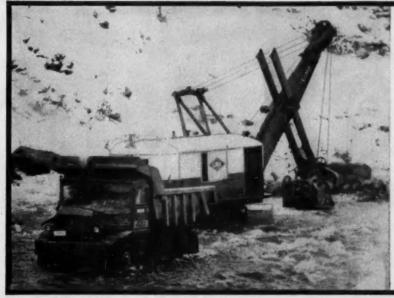
"We believe that with the success of our paving machine, it has been demonstrated that the idea of paving without forms is no longer in the dream stage. We do not claim that the culmination of the idea has been reached. We realize the limitations still existent in our experiment. However, we do not foresee at this point any problems ahead which cannot be overcome.

"It is at this point that the cooperation of the people responsible for the formulation of specifications is sorely needed. Without such cooperation it becomes physically, as well as economically, impossible for the contractor to utilize the necessary field conditions in the development of such machines. We wish to point out that it was entirely with and through the farsighted cooperation of the Illinois Highway Department that our experiment and development was made feasible.

"We are convinced that this present machine is sufficient for the placing of basecourse concrete. If this is to be the type road of the future, and there are some very sound reasons in favor of it, then we shall certainly feel justified in continuing our experiments in an attempt to prove our basic idea sound. We shall also work ahead with the idea that it would be a real boost for concrete pavements if ultimately the costly forms could become a thing of the post."



CUT DOWN-TIME AND MAINTENANCE COSTS



This LIMA shovel, demonstrates the importance of LIMA'S dirt seals and grease retainers.

In such work, abrasive material which wears out the bushings and shafts of ordinary shovels is excluded. LIMA seals the lubricant in and dirt out, thereby reducing friction and prolonging the life of bushing, roller and shaft.

COMPARE! No other machine gives you as much as LIMA!

- Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
- All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life,
- 3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
- 4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
- Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
- Full air controls on travel, hoist, swing and boom hoist, result in smoother, more precise operation, minimum maintenance and less operator fatigue.
- Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
- Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

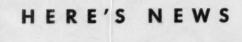
COMPARE and you'll specify LIMA for shovels (34 yd. to 6 yds.), cranes (to 110 tons) and draglines (variable).





BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Construction Equipment Division



They're here now! 28,000-lb. HD-15's with torque converter drive are already rolling off the assembly line.

Allis-Chalmers Powerful HD-15 adds to its big work advantages

. . . now offers choice of two outstanding drives—
standard transmission with time-saving shift pattern,
or widely accepted hydraulic torque converter drive

From its introduction, the Allis-Chalmers HD-15 has set new standards in performance and long-life service . . . in a new size class. It combines outstanding strength and balance with plenty of power, plus a simplified, time-saving transmission that gives big work output. In addition, the HD-15 offers remarkable service simplicity, with features like unit assembly and 1,000-hour lubrication intervals for truck wheels, idlers, and support rollers. It has proved itself the kind of tractor required on today's jobs.

Now, hydraulic torque converter drive is added as optional equipment — an additional working advantage for the powerful HD-15. This advanced design drive was introduced by Allis-

Chalmers in the world's *first* torque converter tractor nine years ago. This modern drive gets more done because it automatically provides the right combination of speed and pull every working minute... and hydraulic cushioning assures longer life for both tractor and auxiliary equipment.

Now you can choose the HD-15 with standard transmission or hydraulic torque converter drive. Either way you'll be getting the most advanced tractor in the business. Let your Allis-Chalmers dealer give you all the reasons why.

ALLIS-CHALMERS



Symbol of greater output, longer life.



Pier Foundation Forms



Retaining Walls



Cofferdam

Armco Sheeting does so many jobs so well

Shaft Lining



Trench Sheeting



Ditch Checks



It can be one of your most versatile tools! Where you have a problem of controlling soil or water, Armco Steel Sheeting can often provide an economical solution.

The light weight and small displacement of Armco Sheeting make handling and driving easier. Either hand maul or power hammer may be used. And on temporary jobs, a small hole at the top of each section simplifies pulling. You can drive this durable sheeting time and time again, cutting unit costs with each re-use.

ARMCO FLANGE TYPE SHEETING is 12 inches

wide and is available in 12, 10, 8, 7, 5, and 3 gage.

ARMCO INTERLOCKING SHEETING, used for practical watertightness, has a covering width of 14 inches and is made in 12, 10, 8, and 7 gage. Both types are supplied in standard lengths up to 20 feet.

Write us for more information on versatile Armco Steel Sheeting. Armco Drainage & Metal Products, Inc., 2384 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Armco Steel Sheeting





"HE HAD CARPENTERS throw up a long shed, screened on all sides, and added saw horse tables and benches. The men did not have to paid high dividends in worker morale."

How to Improve Contractor-Labor Relations

Part 3*...Job Supers Carry the Ball

Jobs keep moving smoothly when superintendents are well informed on agreements and local practices. Workers respect the boss who arranges for their safety, comfort and convenience.

By LEON B. KROMER, Jr.

HOW MUCH OF YOUR TIME as tractors and the unions whose general superintendent is spent handling job labor problems? Is it 35%; 50%? It could, and sometimes does, take more time. And much of that is time you could have spent supervising progress of construction, flow of material from suppliers to the job, coordinating the work of subcontractors and all the other details of your job.

You may feel that time spent with job stewards, and meetings with business agents, is time wasted. Some of it is, but a little foresight on your part can slice off a good bit of it.

Hints That Help

· Before starting the job get copies of agreements between local conmembers you will hire. Keep the agreements on the job.

· Before hiring men of a particular craft read the agreement. Know wages, working conditions, overtime provisions and fringe benefits. Ignorance of some provision in an agreement can lead to a dispute that should have been avoided. For example, a contractor on a job 10 mi from the city line didn't know that the agreement for one of the trades required that he pay travel expense. After the first week went by with no reimbursement for travel, the men refused to come to the job unless they were paid. The contractor, thinking he was right, refused to pay and it took two days

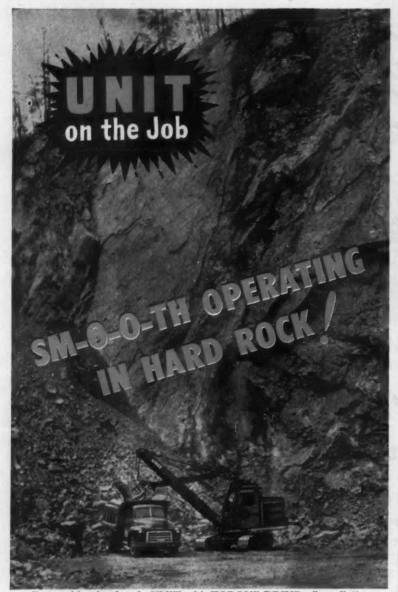


JOB AGREEMENTS between contractors and unions are "must" reading.

to straighten out a needless dispute. The agreement was clear but he hadn't seen it.

· Look over the plans for the job. Make certain that you know the trades to assign to all phases of

*Part 1 was published in CM&E October 1953, p. 79. Part 2 appeared in December 1953, p. 130. Reprints of the complete three-part article are available. Write to: THE EDITOR, "Construction Methods and Equipment," 330 West 42nd St., New York



For working hard rock, UNIT with TORQUE DRIVE offers: Full, steady power without stalling engine—Increased lugging power—Elimination of shock loads on machinery. Investigate these advantages and other UNIT features. Write for Bulletin No. U-1153.

UNIT CRANE & SHOVEL CORPORATION
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1/2 or 3/4 YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



BETTER RELATIONS . . .

the work. If you are not sure, check with the local contractors association or the head of the building trades council. In many areas the council officials not only can, but will, tell you what the area practice is.

Not long ago on the construction of an office building the contractor assigned carpenters to a certain job. The ironworkers' business agent protested that it was their work. When the superintendent got the two business agents together on the job, it was the carpenters' official—who also happened to be head of the local building trades council—who told the superintendent that he had assigned the work to the wrong group. A little checking would have avoided the dispute.

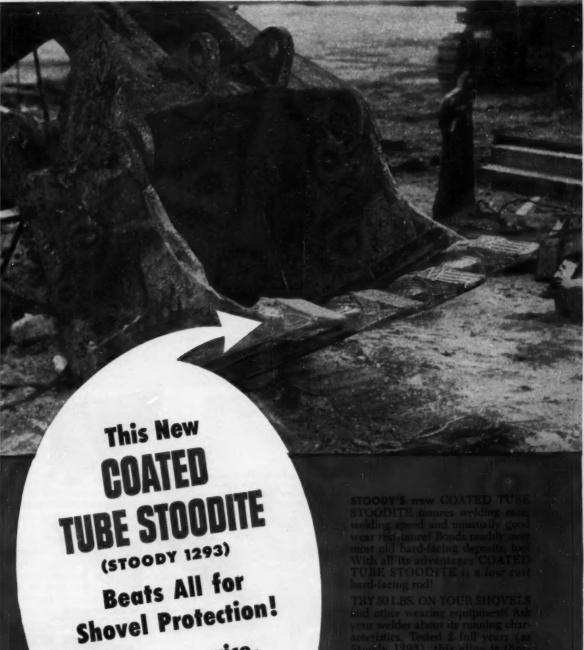


"HAVE YOU HEARD of the Green Book? A copy should be on the job."

• Have you heard of the "Green Book"? You should have a copy on the job. It's a small booklet issued by the Building and Construction Trades Department containing all national jurisdictional decisions and agreements of record. It also has the agreement between the unions and various contractors associations that established the National Joint Board for the Settlement of Jurisdictional Disputes, as well as procedures of the Joint Board that you should know.

Copies can be obtained from the Building Trades Department, 901 Massachusetts Avenue, Washington, D. C., or through your contractors association. You can be sure that every union business agent has a copy of this booklet and is pretty familiar with its contents.

Frequently you can avoid a needless jurisdictional dispute by referring to the Green Book which may have a decision or agreement to cover the work. If not, it tells



Longer service, less down-time at lower cost!

STOODY COMPANY



CONSTRUCTION OF CURBS and GUTTERS IS PART OF YOUR BUSINESS

Heltzel Curb and Gutter Forms (with multi-style face) permit contractors to meet any cross sectional requirement. And optional methods of supporting face allows contractors to meet any construction specifications.



For almost 50 years Heltzel has been furnishing construction people with strong, quick-setting, fast stripping, versatile forms that make concrete forming easier, faster and less expensive.

On this page is a sampling from the world's most complete line of modern steel forms . . . designed and built by the nation's leading menufacturer of forms for concrete construction.

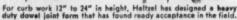




Two of the many variations possible with the popular Helco Basic Forms. These forms are designed to permit contractors to work almost an endless variety of curbing styles from the same basic set. All Helco Basic Forms are made of long lasting tough carbon manganese steel in 10' sections.









For partially bettered curbs Heltzel can furnish either one or two piece front forms depending on your job requirements.







Heltzel builds a complete line of Radius Forms—eitner Rigid or Flexible. All forms are built to exact cross sectional specifications. Flexible Radius Forms are ideal for serpentine work for parks, etc.; Rigid Forms for repetitive curve pours where the radius is constant.

CONTRACTORS AND MUNICIPAL ENGINEERS: Today's high labor costs make the use of steel forms almost a necessity. You'll find that Helizal can provide by far the widest variety of either standard or special forms.

-Naturally It's A-



If you don't already have Heltzel Form Bulletin L-20, get your copy today by writing The Heltzel Steel Form and Iron Company, Warren, Ohio.

Product-

you how to proceed in making the work assignment.

Convenience, Comfort and Safety

• A multitude of little grievances often sets the stage for big ones and prevents solution. Little grievances grow out of ignoring these three factors: convenience, comfort and safety. Convenience of parking facilities for workmen's cars, location of shanties on the job, toilet facilities, affect morale. These may seem like little things, but if men have to walk a great distance from a parking area, or if no area is provided and cars must be strung along a highway, the men become dissatisfied.

This happened to a superintendent on a job employing more than 600 men. Cars were parked along a highway off the job, and it took men from 10 to 15 min to get to their shanties. There was a lot of "beefing" until the superintendent realized that he could lay out what would eventually be the permanent parking area with only a slight change in the construction schedule. Coarse gravel which would have to be laid anyway provided a solid foundation, and planking acted as curbs for head-on parking and as a walkway during rainy weather.

Another superintendent didn't wait for any grousing. On a job in the south, where temperatures went well over 100 deg during the day, he provided shade where there was none. The site once had been a state farm, with no trees to provide protection during the lunch period. The men would have to eat exposed to the direct sun. He had carpenters throw up a long shed, screened on all sides, and added saw horse tables and benches. The small cost to the job paid high dividends in worker morale.

• Disregard of safe working conditions not only can spell trouble with your insurance company, state and federal inspectors, but with the workmen and their unions. International unions, through their magazines, are preaching safety. In many areas men are becoming safety conscious and realize the hazards of working on a job that does not take necessary precautions to safeguard the men. These jobs soon get a bad reputation and experience a high and costly labor turnover.

What to Do

· Make it a point to meet the busi-

ness agents of the unions whose men you will hire before a job is started. It is far better to meet them, either in their offices or yours, and not wait to come faceto-face with them over a job dispute. Don't forget that so long as men are to be furnished by the union, the business agent has the job of representing those men-to that extent his work affects your project. By meeting beforehand you not only establish a valuable and necessary contact but also can learn something about local labor conditions, difficulties you may encounter in manning the job and other helpful information. This is also the time to talk over provisions of the union agreement that may need clarification.

- Be accessible to business agents who may want to see you after the job has started. This doesn't mean giving them unlimited time, but it does mean sitting down with them when they have something to take up with you. Often it is possible to make an arrangement whereby they telephone before coming to the job. In this way they are assured of seeing you and you are in a position to set a convenient time.
- · Jurisdictional disputes are prob-





The mixing plant you see above is not fancy. But it produced 100 yards of top quality concrete a day.

The Dumpcrete you see at left is a rugged low-cost unit that hauled every load 8 miles, and delivered uniform concrete to the exact spot it was needed.

"We knew from experience what our 6 Dumpcretes could do," reports H. G. Helgerson, Pres. of McKoy Helgerson of Greenville, S. C. "So we set up the plant at a railroad siding 8 miles from our job at the Parris Island Marine Base."

"Our central plant and the Dumpcretes made a perfect team for handling the scattered pours," he says. "We're money ahead, because we've compared the costs."

MAXON
DUMPCRETE

Fastest from Plant to Pour

The	Maxol	n Cons	itruction	Co.,	Inc.,	Manufacturing	DIV.
687	Talbott	Bidg., I	Dayton 2,	Ohio			

Send Booklet: "12 Ways to Set Up for Central Mixing"

Name

Firm____

Address



Our plans didn't cover bungling... or a leaky roof!

(A true story based on Company Files #185B4921 and #185B5145)

We're consulting engineers. So, since drawings and tracings are the foundation of our business, their loss or damage could cost us a great deal.

Recently, we faced that fact twice within three months.

First, a client requested that we deliver a set of drawings before we had a chance to run off blueprints. While they were in his office, a "green" clerk all but ruined one drawing. In drafting time alone it was worth \$800.00.

The second loss might have been costly, too. A drawing and tracing for a bridge job were ruined by a leak in the roof of an engineer's shack.

Fortunately we carried a Records Destruction Policy in the Hartford Accident and Indemnity Company which paid the entire cost of replacing both of these drawings.

In your own contracting operations, you *know* how frequently blueprints, engineering plans, drawings and tracings are exposed to damage or loss.

You know, too, that you'll have to replace them if they're destroyed.

But have you ever considered how much that can cost you? Even a series of small losses can add up to important money . . . one large one can run into thousands of dollars.

That's why it is virtually a business

necessity for contractors to have Records Damage Insurance that will provide the money to restore or replace plans, blueprints, etc.—your own, or those that have been entrusted to you.

The cost of this specialized insurance is moderate, the protection it provides is great. Ask your Hartford Accident and Indemnity Agent or your insurance broker for full de-

tails. Or write us for a copy of Bulletin 76059.

Year in and year out you'll do well with the

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BETTER RELATIONS . . .



"BE ACCESSIBLE to business agents who may want to see you on the job."

ably the most serious type that will confront you. That's why it's important to have a copy of the Green Book with the rules and regulations of the National Joint Board. Have the patience to read the rules so that you know what to do in making work assignments and the steps to take when faced with a threatened jurisdictional work stoppage. Frequently, a jurisdictional dispute can be resolved on the job by getting the business agents of the unions involved together and coming up with either an agreement on the trade to do the work or a compromise on the division of work.

It often happens that a compromise settles the dispute, makes everyone happy at no additional cost to the job. However, if the union officials are unable to agree, the dispute should be referred immediately to the National Joint Board. In the meantime, it is important that you continue the work in dispute with the original trade assignment. If there is a work stoppage, telegraph the Joint Board Chairman at 901 Massachusetts Ave., Washington, D. C., and furnish the following information:

Name and address of contractor Project and its location

Work in dispute Trade assignment and trade in dispute or on strike

As soon as possible, furnish by a follow-up letter pictures or drawings of the work involved and any further details as to what steps you took in making the assignment and what was done to try and adjust the dispute.

What Not to Do

• Don't try to get by without men who should be employed according (Continued on page 98)

NO CRUSH DAMAGE





. CRUSHED BY TRUCK TRAFFIC



... REGAINS UNDAMAGED SHAPE

No wire is used in the carcass of Hamilton REVE-LATION Suction Hose. Specially treated, hardtwisted cord and multi-ply heavy duck insure recovery to original shape and prevent conventional hose failure due to crushing.

Hamilton REVELATION Suction Hose is available in 6 popular I.D. sizes; 1", 11/4", 11/2", 2", 21/2", 3". Ask your jobber.

Hamilton REVELATION is made to answer the need for a rugged, smooth bore suction hose that will stand up under the crushing abuse of heavy traffic, rough mining or construction work. Weather and wear resistant corrugated cover over a multi-ply carcass of specially treated hard-twisted cord and heavy duck give this hose the added advantage of instant recovery to original undamaged shape.

Hamilton quality rubber products have served industry for more than three-quarters of a century. If you have a hose or belting problem, send for our literature.



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example, agreements between contractors and the operating engineers often stipulate that an engineer shall be employed when two compressors are in operation near each other. You ask for trouble when you attempt to operate them without an engineer and expose yourself to charges of violating the agreement.

· Don't try to save on costs by cutting corners on jurisdiction, even though the job may have been a "tight" bid. If members of a trade

to the collective agreement. For should unload their own material, don't assign laborers to do the job. If a trade with a higher hourly rate should perform a particular type of work, don't put another trade with a lower rate on the job, just because you think you can save on their wages. You lose much more by the dispute that will surely develop and build up distrust with the unions.

A superintendent on a bridge job assigned dockbuilders to install the steel guard rail along the roadway-work that should have been performed by ironworkers, who were paid about 35c per hr more. When he refused to assign ironworkers to the job, the union pulled the men off the project. It took five days to get all the men back to work after the superintendent agreed to correct the mistake. No amount of time could correct the distrust his action engendered with all the unions.

· Don't mislead union officials by misstatements of fact, whether it's preliminary to the job getting under way or during a dispute. While a business agent may, and often will, disagree with what you say, it is much better that he know you are being honest with him. On the other hand, if a business agent either suspects or finds out that you intentionally misled him (and he will eventually) it will prove costly to your job. Your greatest asset in dealing with union officials is a reputation for a fair and honest



APPEASEMENT is not a good policy when demands are unreasonable.

- · Don't follow a policy of appeasement when faced with unreasonable demands that go beyond the provisions of the collective agreement. Follow the agreement and you can be firm in insisting that the union do likewise. One union business agent learned from his international union that he couldn't ignore signed collective agreements. He was removed from office and the local put under international control. If you deal with a business agent who tries to run your job, get in touch with the international union and a representative of the international will be assigned to the dispute to help straighten it out.
- · Don't indulge in name-calling. Several years ago a job superintendent was accused of violating a (Continued on page 100)



Treacherous soil made SAFE in deep cut in fine wet sand

Treacherous soil conditions were encountered in this excavation for the installation of a Pipe Line Siphon under the bed of the Gila River for the U. S. Bureau of Reclamation Gila Project at Wellton, Ariz.

For a quarter of a mile the cut was 25 ft. deep in extremely light and fine sand, with little cohesive quality of the particles.

Ground Water at subgrade, and excavation into the wet material caused continuous sloughing of the dry soil above.

So the contractor installed a Stang Wellpoint System . . . the cut was quickly and economically stabilized . . . and pipe laying proceeded at a normal rate.



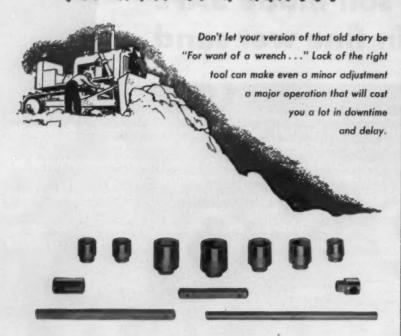
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"For want of a nail ... "



With Bonney Tools, your mechanics can do a better job—a faster job—of servicing trucks, stationary engines, and off-the-road equipment. That's because Bonney Tools are especially designed, forged, and heat-treated to stand the gaff in rugged service. They not only help cut maintenance costs, but reduce injuries caused by the use of inferior tools. Bonney Tools are available at automotive jobbers everywhere.



BONNEY FORGE & TOOL WORKS, ALLENTOWN, PENNSYLVANIA

BETTER RELATIONS .



NAME-CALLING can get you into a bad fix. Be careful always.

provision of the collective agreement. In the argument that developed with the job steward, with tempers hot, the superintendent called the business agent of the union a blankety-blank racketeer. Needless to say he wasn't but was doing his job as head of the union.

The superintendent has paid dearly for an irresponsible remark. When disputes developed involving that union, he could not get in touch with the business agent nor has the business agent since that time agreed to participate in labor matters involving jobs under the direction of that superintendent.

- Don't try to be overly friendly with union officials. It is not good business and can handicap you seriously should a job dispute arise involving their unions. You should be friendly the same as you would to anyone else in business. Many times the easiest way to settle a dispute or discuss a problem is over the lunch table.
- Don't try to be a lawyer but remember the Taft-Hartley act has prohibitions against certain practices that were common to the construction industry and has teeth to carry them out. The most important point to permit is no discrimination in hiring and firing of men. Don't tell a job applicant that he must clear himself with the union before you can employ him. Don't fire a man, regardless of his union status, simply because the union tells you to do so. You expose yourself to charges before the National Labor Relations Board which can prove to be very ex-



Adjustable feed plate (1) guides in-coming rock at proper angle into first rotor hammer circle (2). Infed rock is intercepted in motion, exploded instantly by the terrific impact of the rotor hammers and simultaneously projected toward deflector screen grate (3) where finished sizes are immediately discharged.

Oversize particles are deflected upwards, intercepted by feed chute back plate (4) and guided downward into the path of the second rotor hammer circle (5) where they are exploded and projected toward the bottom half of the deflector screen grate and the lower screen grate (7) for immediate discharge.

Both rotor hammers rotate in the same direction toward the rear, promoting fast feeding and keeping all material flowing toward the discharge for top capacity.

Finished product sizes are controlled by the speed of the rotor hammers, and by simple adjustments (8) of stripper bar (6) and lower screen grate.

By controlling the infed rock and directing its flow, the breaking is accomplished by the impact of rotor hammers upon the rock. This reduces wear and makes possible the more uniform gradation cubical aggregate.

GET THE FULL PROFIT-MAKING STORY

Write for literature. Get complete details on the Universal Impact Master. Learn all about its high ratio of reduction which eliminates secondary crushers and auxiliary equipment. Get top quality uniform gradation cubical aggregate and greater production of saleable finished sizes. Impact Masters are used in open and closed circuits for



producing road-building and concrete aggregates, and can be adjusted for the simultaneous production of aglime when desired. They are available with capacities to 750 tons per hour. Write today.

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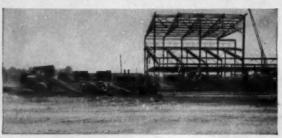
Pictures of the month... by LeTourneau-Westinghouse...



Cheaper than tracks — Wagner Quarry's Tournatractor handles limestone stripping, stockpiling, odd jobs on 150 acres in Ohio. In 18 months (2000 hrs) of year-round work, unit has been 98% mechanically efficient. Says W. J. Sprow, General Manager, "It's cheaper and faster to run on rubber than on tracks. Our 1 Tournatractor has replaced 2 crawlers."



Licks swamp and sand — Sand and swamp hold no fears for Mike Stiriz of Patchague, N. Y. His C Tournapull loads 14 pay yds of highly abrasive sand, has no trouble filling over swamp for extension of Sunrise Highway at Oakdale Station.



5,000 yds per day — Grading 150,000 yds for a 1/2-mile trotting track in Delaware, 5 C Tournapulis average 5,000 yds per day for the Brandywine Raceway Assn. Job Foreman says one Tournatractor-pusher (right) has kept all 5 Tournapulis going on 600 ft one-way hauls. When hauls are shorter than 600 ft, or material tougher than usual, a crawler-pusher helps out.



50 yards per minute __ 2,500 pay yds of well sandy loam per hour was the exceptional output that finished a 4,000,000-yd, 1,000-acre expansion of McGuire Air Force Base in New Jersey in 8 months. Ten 16-yd C Tournapulls like the one

shown above, one $27\frac{1}{2}$ -yd Tournapull, and seven $17\frac{1}{2}$ -yd Tournapull-type rigs accounted for this 50-yard-a-minute production rate on 1,000 to 2,000 ft hauls. Contractor on the \$3,500,000 job was Yonkers Contracting Co, a subsidiary of Edward J. Petrillo, Inc.

. . . with performance reports from around the world (cont'd.)



Look out below! — Relocating 4.2 miles of County Road 360 at Lookout Point Dam, Oregon, G. D. Dennis & Sons, Portland, used 3 D Tournapuli rear-dumps to haul 265,000 yds (530,000 tons) of rocky earth, Dump was made quickly and safely from ledges

27 ft wide. Moving 6½ to 7 bank yds per trip, each "D" delivers 104 to 112 tons hourly on 1300 ft cycles. Says Supt Donaid Dennis, "Machines did a fine job widening shoulders and constructing access roads. We're pleased with their maneuverability in close places."



2 rigs, 300 yds per hr — Hauling wet clayey sand over 2200 ft cycles, these 2 C Tournapulls moved 28 loads per 50-minute hour. Haul speeds, despite very soft footing, averaged 8½ mph. Owner reports 300 mile drive to job took only 10 hours actual road time. Units belong to L-S-M Construction Co, Ltd, Swan River, Manitoba, Project shown is 250,000 yd, 7.1 mile widening of Hwy 14 near Foam Lake, Saskatchewan.



At Garrison Dam — In 2 months these 3 C Tournapulls built a 60,000 yd, 2.2 mile access road to the dam and reservoir. On 600 ft hauls, each unit moved 19 loads (190 pay yds) of sandy loam per 50-minute hour. Owners, Tennefos Constr Co, Fargo, N. D., report tires shown have lasted 10,000 hours, Since purchase in 1949, only 3 of original 12 tires have been replaced.



Refuse put to good use — Many contractors operate sanitary landfill dumps like this for communities that do not own modern earthmovers. Here, Tournatractor dozes garbage and refuse into a gully in Nashville, Tenn. Later, rig spreads earth cover that eliminates odors, other nuisances of open dump. When fill is completed, city will gain a park or building site.

Pictures of the month . . . by LeTourneau-Westinghouse . . .



Haul over roads or open country—Four 35 mph C Tournapulls help speed dirmoving for J. F. Fitzgerald Company on cloverleaf construction for the Boston-Fall River Expressway, 30° oscillating pivot (big picture) permits fast haul over rough ground without stresses and strains between prime-mover and

scraper. Low-pressure tires let rigs drive over pavement without damage to surface (small picture). Fitzgerald gets additional value from his Tournapull prime-movers by interchanging the 16-yd scrapers with 18-yd bottom dumps. All trailing units use same tires, wheels, brake assemblies . . . thus reduce total machine investment.



Haul where trucks can't — When grades at their limestone pit near Ames, lowa, got too steep for loaded 5-ton trucks, Ray Cook Construction Co drove in two 9-ton LeTourneau-Westinghouse rear-dumps. These units (with their high ratio of h pto with haul 9 yds of shale-clay overburden per load ... complete 1250 ft cycles every 5½ minutes up same grades that stopped trucks.



Plenty of power — 186 hp Tournatractor develops plenty of drawbar pull to tow 200-ton rubber-tired roller. Designed and built by Shovel Supply Co, Dallas, compactor rolls new runway in Texas for heavy jet bombers and big transports. With low-pressure rubber tires on both roller and tractor, operator can cross runways, ramps, and aprons without damage to concrete.



Strips 66 pay yds per hr — Georgia Lime Rock Company works this D Tournapull 12 months a year to strip 3 to 30 ft of low-grade Fuller's earth, Because of its speed, one-man "D" alone uncovers enough lime rock to keep the plant busy. In typical operation, "D" loads 5½ bank yds in 25 seconds. Output averages 66 to 71 bank yds hourly over 1800 ft cycles.

. . . with performance reports from around the world



In hilly country — R. A. Farish, on 85,000 yd housing job south of San Francisco, takes advantage of downhill loading to heap 13 pay yds in his C Tournapull. On 1100' cycles, "C's" instantshift transmission enables operator to quickly select proper gear for steep grades. Four-wheel brakes provide ample safety margin.



Effective three ways — Tournapull rear-dumps haul, doze and compact up to 500 tons of coal a day in this stockpiling yard in Malajor, India. Calcutta Electrical Supply Corporation, Ltd is using 2 of these 9-ton units to eliminate hand-labor problems at their power station. Totally inexperienced operators learned how to use the "push-button" controls within a few hours.



Through mud and rain — J. B. Evans Contracting Company, Quitman, Mississippl, is using D Tournopulls to relocate 1.2 miles of U.S. Hwy 90 near Bay St. Louis, Mississippi, During a steady drizzle of rain, units kept meving in and out of saggy borrow pit, over soft wat fills, without pusher help. Complete 11,000° cycles took only 7 minutes 30 seconds.



Turns in 27 ft width — Because of Tournapull maneuverability, tight quarters didn't slow this job at all. Hugh Boyle & Sons' 2 C Tournapulls turned around easily, non-stop on this 27 ft street in Washington, Illinois. Removing hard-packed clay

and gravel to prepare roadbed for paving, loads averaged 11 pay yds, Cycle of 5000 ft took 10 minutes. Haul was over rough scarified blacktop of old road. For information on any tools on these pages, write LeTourneau-Westinghouse Company, Peorla, III.

Tournapull—Trademark Reg. U.S. Pat. Off., Tournatractor—Trademark Pic-611-G-c



RIVER WAS SO SHALLOW equipment could not be floated under a near-by railroad bridge, so the contractors found it necessary to

construct this wooden trestle with a finger pier to get access to the work so land equipment could be used.

Land Type Equipment Builds Bridge...



AERIAL PHOTOGRAPH shows the work progress of the bridge Costing a million and a half dollars, the concrete and steel structure spanning the Anacostia River on the Baltimore-Washington Parkway. will be finished next summer.

Off Wood Trestle and Finger Pier

THE BALTIMORE - WASHING-TON PARKWAY will have a million-and-a-half-dollar bridge completed next summer which holds promise of being one of the most beautiful structures in the East.

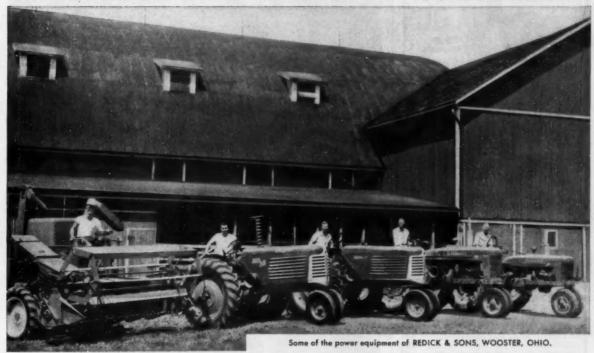
Located just south of Bladens-Anacostia River and is being constructed of steel and concrete.

Funds for the structure came from the Department of Interior,

National Capital Parks Service. burg, Mdl, this bridge spans the Engineering originated in the Department of Commerce. General Contractor is Chas. H. Tompkins Co., Washington, D. C.

(Continued on page 108)

A STORY FOR EVERY MAN WITH ROLLING STOCK



SIX TROUBLE-FREE YEARS WITH CITIES SERVICE C-300 OIL!



FOR THE MAN WHO GROWS FOOD. For their trucks, cars, tractors and other power equipment, including diesel above, the Redicks use only Cities Service C-300 Motor Oil.



FOR THE MAN WHO TRANSPORTS FOOD. Albert Herda, trucker extraordinary, uses Cities Service C-300 Motor Oil in year 'round operation between Minnesota and Alaska!

You may say, "What's a farm story doing in this magazine?"... and it's a good question Mr. Fleet Owner, or Mr. Contractor... a good question until you remember that much of the equipment the Redicks will use to farm 1000 acres is the same kind of equipment you use. Diesels, gasolene engines, separate power units, all with a thousand finely machined, intricate pieces of mechanism that demand the finest lubrication in the world. THAT'S WHAT THE REDICKS GET and that's what you can get in all your equipment with Cities Service Heavy Duty C-300 Motor Oil.

This great Cities Service Motor Oil serves bus fleets, truckers, farmers and construction crews throughout most of the country. Try C-300 in your operation and check mileage, wear and performance. Call the Cities Service Office nearest you or write to Cities Service Oil Company, Sixty Wall Tower, New York 5, New York.

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Write for Circulars

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ELKHART 6

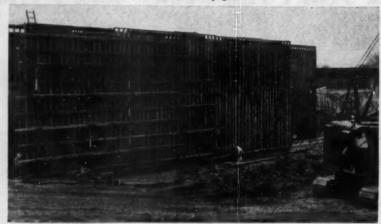
INDIANA



What fire crackers? We mean those welding and cutting torches that keep popping—back-firing—burning out valve seats. Did you know that the ingenious new Smith "FLO-TROL" prevents reverse flow of acetylene—protects torch against backfire and burned out seats?

Write us a card ... NOWI

SMITH WELDING EQUIPMENT CORPORATION Dept. CME-82, 2633 S.E. 4th St., Minneapolis, Minn. ANACOSTIA BRIDGE . . . Continued from page 106



WORKMEN ARE ERECTING wooden form for one of the piers. This pier will be 6 ft wide, 24 ft high and 130 ft long. The pour will be of the solid-block type.



THIS IS THE INSIDE of the cofferdam for Pier No. 2. The tremie seal has been poured, and mechanics are working on top installing reinforcing steel. Note internal bracing.

It will be a dual-highway bridge with a center dividing strip, with wing walls, rounded abutments and pier ends faced with Class A granite masonry.

More than 12,000 cu yd of concrete will be used—9,200 of it Class AA and the balance tremie seal concrete.

Steel also was an important factor in this contruction. Structural steel called for 1,700,000 lb, and 1,100,000 lb of reinforcing steel was used.

It will be 550 ft long, measured from end of wing wall to end of wing wall, 72 ft wide and will be 25 ft from the deck of the bridge to the water to provide ample clearance for flood conditions.

Contractor Tompkins was unable to use floating construction equipment because of the shallow water at the bridge site and a low adjacent railroad bridge, so a wood trestle was constructed with a finger pier to get access to the work. This permitted the use of land-type equipment.

The contract also provides the stream be dredged and widened for possible future navigation.

Pier No. 1 and the west abutment, located within a large excavation, were poured dry. In order to do this, a levee was thrown around the area and two stages of well-points used. The first stage carries down to EL -16 and the second stage to -27.



MORE THAN 12,000 CU YD of concrete will be used on the structure. Bottom-dump buckets similer to this were used to pour.



FIVE MASTER CONCRETE VIBRATORS with flexible shafts and housings compact the concrete pours in the wooden forms.

The remaining piers and east abutment were excavated within a steel sheet-piling cofferdam.

Project Engineer is E. L. Tarewater, and general superintendent is Lytle Brown.

Subcontractors on the job are: Reinforcing steel, Sam J. Passmann, Washington; Stone, Louis Perna & Sons, Inc., Washington; Structural Steel, Harris Steel & Structural, New York; Concrete, Silver Hall Sand & Gravel, Washington; Electrical Work, Howard P. Foley Co., Washington; Abutment Fills, Morauer & Hartzell, Inc., Washington.

Equipment used on the job included:

- 3 Ingersoll-Rand air pumps, Model 25
- 2—6 in. electric pumps, capacity 90,000 gal per hr (Carver) for dewatering cofferdams

- 2 Insley bottom-dump laydown concrete buckets
- 3 Blaw-Knox 2-vd buckets
- 5 Master Vibrators
- 2 Manitowoc Cranes, D-3500 series with 80-ft booms
- 1 Link-Belt truck crane
- 1 6-in. Air Lift
- 1 Ingersoll-Rand Gyro-Flow compressor
- 1 315 Air Compressor
- 1 HD-5 A. C. tractor shovel
- 1 11/2-ton Ford truck

Griffin Wellpoint system using 3 - 8-in. pumps

- 1 Bucyrus-Erie hydraulic truck
- 2 300A electric welding machine
- 1 300A gas-drive welding machine

How to Get Them Ready

HARNISCHFEGER CORP. makes these "before starting" recommendations for equipment that has been idle several months.

 Oil adhering to screens in air cleaners may have hardened and accumulated moisture and rust. Wash in clean kerosene, dip in light oil and drain.

2. Clean fuel system. Drain old fuel oil from tank and use for cleaning purposes.

3. Clean cooling system, using a recognized flushing compound. Flush and refill with clean soft water

 Inspect hydraulic hoses, flexible fuel connections, fuel pump diaphragm and water hose.

5. Lubricate entire machine; drain small quantity of oil from each case to remove condensation.

NO OTHER PUG MILL MIXER GIVES YOU THIS FEATURE



Look at the photo above. It shows how easy it is to replace a worn liner segment in the MADSEN Model 440 Twin-Shaft Pug Mill Mixer. It's a one-man operation, completed in the field in a matter of 20 minutes! The worn liner segment together with the liner frame is removed and a new liner support frame and liner segment is inserted in its place from the outside! No need to remove paddle shanks... and no need for jacks, crowbars or heavy chain hoists. The liner segments in the MADSEN Model 440 Mixer are precision ground to a width tolerance of 0.03" plus or minus. They fit perfectly without field modification. The sectional small-piece replacement design permits the user to shift parts to secure the maximum wear feature essential for lowest replacement cost.

** * * * *

Based on its performance in all makes of asphalt mixing plants, the MADSEN Twinshaft Pug Mill Mixer is considered the outstanding mixer in the industry. Combine this new MADSEN Pug Mill Mixer with the famous MADSEN Asphalt Pressure Injection System

(Patented), and you have the right combination for a more profitable asphalt plant operation.



Externally remavable liner segments is only one of the years-shead MADSEN features incorporated in the MADSEN Model 440 Twin-Shaft Pug Mill Mixer. It will pay you to get the complete story... WRITE FOR BULLETIN NO. 400.



MAD/EN IRON WORK/, INC.

14100 E. ROSECRANS AVE., P. O. BOX 38
LA MIRADA, CALIFORNIA



GRADALLS HELPED OUT on construction of steam plants and dams, for transmission towers on the \$900-million Tennessee Valley Authoriconstruction of substations for power, and digging of tower footings ty 14-project expansion program.

Gradalls Pile Up High Score in 5 Years With TVA

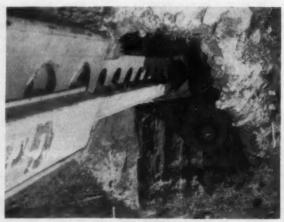
THE TENNESSEE VALLEY AU-THORITY, expanding its facilities in an attempt to catch up with the demand for electric power, is making excellent utilization of 13 Warner & Swasey Gradalls to complete 14 projects amounting to an investment of \$900 million. The projects include five large steam plants, two dams, and additional generating units.

The Gradalls rate in the top

bracket for utilization, according to Charles Hudson, assistant chief of the Transportation Branch of Chattanooga. He stated that 1,000 to 1,200 hr annually was considered (Continued on page 112)



FEATHERTOUCH CONTROL of the Gradall permits the operator to hold specifications within 1/4 in., if necessary.



LONG BOOM on the Gradall enables the bucket to reach down to 9-ft depths on excavations for the tower bases.

White nan leads again!

WITH THE GREAT NEW MODEL B-1

Now, the machine that revolutionized conclete inshing ... the world famous Whiteman Model B Floating Finishing Machine has an illustrious successor! The termic new Model B-1 offers greater utility greater ease of operation greater safety

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THE LEADER IN CONCRETE EQUIPMENT



CAUGHT IN THE ACT OF SAVING A LIFE!

High speed photographs of a 3-lb. pipe wrench dropped from 14 ft. prove that Bullard's exclusive ribbed crown construction gives an added margin of safety, and exceeds standard 40 foot pound drop tests.

BULLARD ALUMINUM SAFETY HATS & CAPS



Only metal safety cap manufactured. Flared brim protects ears and neck, but does not interfere with carrying or working in close quarters.



Weighs only 12 ounces. Universal headband can be adjusted to any standard size in two minutes.



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HARD

'S REG, U. S. PAT, OFF.

E. D. BULLARD COMPANY

275 Eighth Street, San Francisco 3, California Distributors Throughout The World HIGH SCORE FOR GRADALLS ... Continued from page 110



OPERATOR OF THIS GRADALL is compacting the earth backfilled into the open trench. The flat back side of the 8-in. blade is laid flat on the fill and full down-pressure applied with the boom. Note the down-pressure raising the Gradall off the ground.



TOTAL OF 13 Gradalls are operating on the 14 TVA projects. Over a 5-yr period, the machines have averaged 1,248 hr annually, which is high according to TVA records. This machine shown here, has been working for 8 months with no down-time.

"pretty high" for TVA equipment. The Gradalls, over a 5-yr period, have averaged 1,248 hr per yr.

Gradall's part in this multi-billion-dollar program includes: (1) A minor but varied part in construction of steam plants and dams, (2) construction of substations which distribute the power, and (3) the digging of tower footings for the hundreds of miles of transmission towers.

The Gradalls are owned by the Transportation Branch of TVA and are mounted on FWD trucks with 6x6 drive. While the Transporta-

tion Branch owns and maintains the machines, they are assigned to either the Power Engineering and Construction Branch or to the Design and Construction Branch. These branches pay the Transportation Branch an hourly rate for each machine and supply their own operators, oilers, gas and oil.

The Design and Construction Branch handles the large construction projects, such as the dam and the huge steam plants which are under construction.

Probably the toughest job on the TVA projects is the construction of



GRADALL IS USING a 36-in. bucket to cut a "V" ditch for drainage adjacent to a rail-road siding area at the Bowater substation project. To cut the ditch the operator merely titled the boom. The same Gradall dug and graded the siding.

transmission lines. At the end of 1952 a total of 8,216 mi had been completed with hundreds of additional miles completed in 1953.

In all but the most inaccessible places Gradalls are used to dig footings for transmission line towers. At times they have been buried in mud up to the platform and had to be maneuvered into position by crawler tractors.

Use Two Methods

Two different methods are used in putting up towers. The first, Gradalls dig four holes for the tower grillage and move on to the next site to dig footings for another tower. In the second method, the Gradall digs one footing. As soon as this one is complete, the grillage crew sets the leg or base for the tower in this hole. In the meantime, the Gradall has completed the second hole. This process continues with the Gradall finishing each tower footing just before the steel crew moves in.

The Gradall, after completing the fourth hole, goes back to the first to backfill. It backfills holes 1, 2, and 3 while the grillage is set in hole 4. The machine then backfills hole 4 and the entire crew moves on to the next tower site. This method has been used successfully to do four structures a day—dig 16 holes, set steel grillage and backfill. The average tower hole is 5 ft square and 7 ft 6 in. to 9 ft deep.

Records of the Transportation Branch show the following average



OPERATOR of a Gradall has excellent visibility to observe digging action and make clean cuts.

monthly Gradall use since the purchase of the first unit in 1948.

	Hr Pe	Hr Per	
	Month	1 Year	
1948	125	1,500	
1949	00	1,068	
1950	 104	1,248	
1951	 95	1,140	
1952	107	1,284	
1953	95	(estimate)	



Steel, molten at 3000° F., was poured over a Bullard Fiberglas Safety Hat. The

white hot metal did not pierce any part of the hat. Proof of the extra margin of safety built into all Bullard Fiberglas Hats and Caps.





BULLARD FIBERGLAS SAFETY HATS AND CAPS

Test-Proven SAFER!



Exceeds all standard industrial tests: impact, dielectric, moisture and is self-extinguishing. Lighter, more comfortable to wear, with adjustable headband. Your choice of permanent molded colors at no extra cost.



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WORLD'S FINEST TRACTOR EXCAVATOR



TYDRAULIC TORQUE CONVERTER WITH UNIDRIVE TRANSMISSION — AN EXCLUSIVE FEATURE ON EMCO TRACTOR EXCAVATORS

When hydraulic torque converters were first used in heavy prime moving equipment it marked a step forward in tractor design. But now the hydraulic torque converter with the Eimco Unidrive transmission provides the ultimate in heavy tractor drives and the ideal combination for effortless operation, longer life through cushioned load, increased work output and maximum operating efficiency.

The Eimco 105 is the only crawler tractor with the maneuverability permitted by hydraulic torque converter and Unidrive transmission.

This combination of mechanical ingenuity makes the 105, a 17 ton brute, as agile as a kitten. You can dance right, left, forward, backward without stopping to shift, without scraping a track pad.

The Eimco 105 matches all load conditions with exactly the right combination of speed and power and is capable of exerting maximum draw bar pull AT ALL TIMES.

It is the only crawler tractor in which the operator can change gears under full load, on grades or uneven terrain without stopping, losing position or dropping the moving load.

The 105 develops more drawbar pull per engine horsepower than any other tractor.

The 105 is the only tractor designed for the heavy attachments ordinarily used on tractors today. This extra strength built into the 105 is designed to

THE CHOICE OF THE RECEIVE WAS NOT THE SEC.

absorb the extra vertical loads into the main frame permitting all auxiliary equipment to be attached to the frame and leaving the tracks free to oscillate on uneven ground.

105s are made of heavy fabricated or cast alloy steel parts throughout. All gearing, bearings and shafts are oversize for years of uninterrupted service. All parts are easily accesible for quick service. Clutches never need adjustment. Timken tapered roller bearings are separately caged in track rollers, idlers and final drives for perfect alignment, accurate fit and long life.

The Unidrive transmission is a compact, complete unit, containing all the gearing and clutches for speed changing and full independent reversal of each track. This design combines all of the best features of constant mesh gearing and hydraulically operated friction clutches with sealed oil bath pressure lubrication of all wearing parts.

The independent control of each track, made possible by the Eimco Unidrive transmission, is another exclusive feature. Two separate final drives, one for each track, have extra heavy alloy steel gearing and extra large diameter shafts. There are

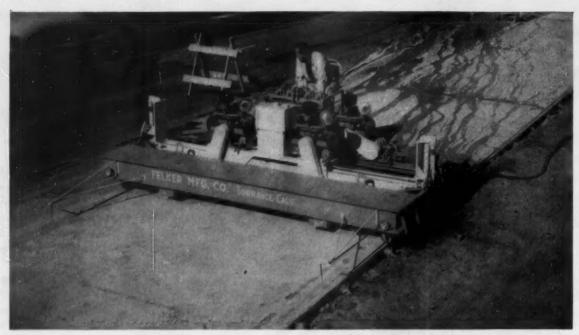
no clutches, brakes or gadgets in the Eimco 105 final drives.

The operator of the Eimco 105 sits up front where he can see his work. The controls are easy and convenient. Tractor controls require only one hand with the other free to operate the attachment. Foot pedals have been eliminated for clutching, shifting or turning. Stopping to shift for speed changes or reverse is eliminated.

The Eimco 105 gives you new, low operating and maintenance costs. You get the work capacity of the largest crawler tractor units but with the low initial investment as well as the operating economies previously confined to the smaller tractors.

Eimco 105s offer more exclusive advantages and have improved design and construction features in EVERY part. This is the reason Eimco 105s are increasing output with lower operating and upkeep costs on every job. See this revolutionary piece of tractor equipment before you consider buying anything in the tractor, excavator, shovel or bulldozer line. Write for complete information. The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.





ONE MAN, two saws and three engines ride a self-propelled rig and cut a 12-ft transverse concrete pevement slot in 75 sec. Felker concrete saw rides on road form for Griffith Co. on widening job near

San Diego, Calif. Two 26-hp Kohler engines up front run saws. Third Kohler in rear runs hydraulic pump powering travel, saw carriage for feed, and retract.

Tandem Saw Rig Cuts Pavement Joints

Another Equipment Development Report By HAROLD W. RICHARDSON, Editor



RUBBER-TIRED WHEEL TRAVEL on the slab is arranged easily. Hose bringing cooling water to saw blades can be connected on either side. Engine at left of operator powers triple-stage hydraulic pump on platform. Hydraulic rams at each end of the machine lower and raise saw carriage beam, but depth of cut is regulated by screw jack on lifting cradle as saws operate in tandem. Travel wheels are adjustable for various slab widths.

TO KEEP IN STEP with the rapidly growing practice of sawing transverse contraction joints in concrete pavement instead of forming them, the Felker Manufacturing Co., of Torrance, Calif., has developed a self-propelled rig mounting two concrete saws in tandem that can cut a slot 12 ft long in 75 sec.

The machine, spanning a 12-ft slab, is equipped with hard-rubber tired wheels to ride the concrete, header boards or forms, as desired. Removable flanges can be attached to the wheels for riding forms. Width between wheels is adjustable for various slab widths. A fifth wheel can be lowered hydraulically to give a tricycle support for turning the machine in a 12-ft circle.

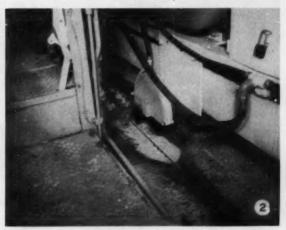
The saw mounting resembles a concrete pavement finishing machine. Spanning the slab transversely is an H-beam carrying two saws in tandem. Each saw travels 6 ft, or half the length of the beam, (Continued on page 118)



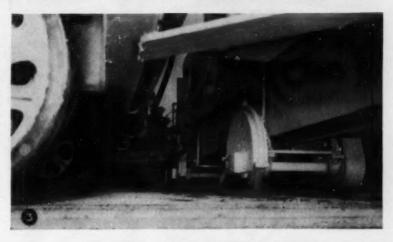
OPERATOR CAN SEE both saws and four travel wheels at all times. Smaller (raised) wheels are safeties, support machine in case travel wheels run off sides of slab or forms. Fifth wheel in center (retracted)

is lowered hydraulically to create a tricycle mounting for turning the machine within a 12-ft circle. Hand brake holds saw rig steady when slotting slabs on a grade.

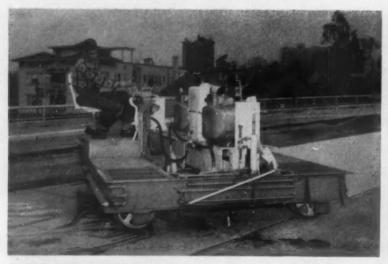




(1) TWIN TANDEM SAWS and their two power plants ride as integral units on their carriages across a sturdy H-beam, and separate cuts are kept in perfect alignment.
(2) When joint has been cut, saws are raised for travel; carriages are moved back to starting position, as rig moves to next location. (3) Saws work in water bath jetted from two sides for each blade. Note rugged mounting and heavy drive shaft turned by direct chain drive from engine above.



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FELKER SAW TURNS EASILY on the slab in a 12-ft circle, made possible by retractable fifth wheel which gives a tricycle effect. Front wheels are driven by hydraulic motors.





SINGLE FORK LIFT picks up the Felker machine (top) for easy loading aboard a flatbed truck for long move. Saw rig is 8 ft wide, can be hauled on highways without special permit.

and they can operate independently or simultaneously. Saw blades are Felker Di-Met diamond disks, from 8 to 18 in. dia, though the 10-in. and 12-in. sizes are most popular for payement sawing.

Kerfs are about ½ in. wide, can be up to 6 in. deep, but 1 to 2 in. is customary. Each saw is driven by an individual 26-hp Kohler gas engine with starter and generator. Spindle speed is set for 3,200 rpm for a 12-in. disk.

Cross-feed-transverse travelof each saw assembly is controlled by a hydraulic motor. Travel of each saw carriage is independent, and can be varied from 0 to 25 fpm. Riding on the same beam, the two saws cut a kerf that is in perfect alignment. As the saw beam is raised and lowered by hydraulic rams, the depth of cut can be accurately set and held. Automatic stops check the travel of each carriage and, in raised position, the cross beam is automatically locked to prevent accidental dropping that might damage the saw blades.

Day and Night

Two individual hydraulic motors drive the two front wheels forward or back for road travel and moving from one slot to the next up to 75 fpm. Separate control for each wheel drive permits reversing one drive for turning the machine with the fifth wheel down.

A third 26-hp Kohler engine drives a pump that supplies hydraulic power for all operations except sawing — propulsion, raising and lowering the saw carriage beam, and cross-feed drive for the saws. The fifth wheel is lowered by a hydraulic hand jack.

When cutting, saws must be cooled by a water stream played directly upon the blade. Cooling water is supplied from an outside source through a hose connection on each side of the machine so the supply hose need not be carried across the slab. Water spray on the blades is turned on and off automatically as the carriage beam is lowered and raised.

Four lights on the unit permit night cutting. Pointers align the saw beam for precise cutting, and additional pointers guide the machine when traveling. The operator can see all four wheels and both saws at all times. A hand brake holds the unit in position when it is operating on a grade. Travel wheels are 16 in. dia. Four 14-in. safety wheels, on the same axles, prevent the machine from dropping should the travel wheels run off

the header boards or road forms.

The entire unit is 14½ ft long, 8 ft wide, and 58 in. high to top of engines. All controls can be handled easily by one operator.

The first production machine was tried out by Griffith Co., Los Angeles, on the Torrey Pines highway project near San Diego. Here 1¾-in. deep cuts were made in an 8-in. pavement at the rate of 12-ft in 75 sec. with two 12-in. saws.

Usual practice is to make a cut every 80 ft when the concrete is 8 to 12 hr old to prevent primary cracking. Then intermediate cuts 20 ft apart are made when the pour is about 36 hr old. Saw life varies with type of aggregate, depth of cut and age of concrete, but the blades cut from 400 to 2,000 ft of slot. Fresh and old concrete are hardest on the blades. Maximum saw life seems to come from cutting 36-hr-old concrete.

The new machine is not recommended for cutting longitudinal slots because of excessive maneuvering required. Single-disk saws are best for this purpose.

Felker Manufacturing Co. (1128 Border Ave., Torrance, Calif.) proposes to make the new machine available through distributors on a royalty rental basis, at so much per ft of slot cut.

Specific Suggestions Come From Workers

WORKERS' IDEAS can be mighty helpful, if management stops to listen. Hendrickson Bros., Inc., a Long Island contractor, interviews several men in each issue of its house magazine, "Hendrickson News." Here is a new thought on safety.

Said Cornell Kasso: "I've had enough experience to be able to say, "There is no half way in safety.' It's all or nothing. For instance, there is no use building a guard rail for protection of your workmen if you use 8d nails where it calls for 16d. There is no use making up a lot of safety rules for a job and keeping them stuck in the bottom drawer of the job clerk's desk.

"The choice of men to perform a certain task should be considered in the same manner as when choosing materials. It is just as foolish to choose a man to do a job that requires sure footing, knowing that he has 'two left feet,' as it is to substitute materials."





ATHEY JOB-MATCHED TRAILERS PUT MATERIAL TRANSPORTATION ON A PAYING BASIS!

Athey Trailers make full use of all the dependable horsepower in Cat Diesel Tractors. They haul capacity loads — at top tractor speeds — and keep working through thousands of trouble-free hours. That means your costs come tumbling down...your production stays at the high-profit level.

Ask your Athey-Caterpillar Dealer for facts on the Athey Trailer — on rubber or tracks — that matches your job and profit requirements.

IF YOUR HAULS CALL FOR RUBBER...

.. Athey PD10GP, PD10Q or PD20 Trailers team with Cat® wheel-type Tractors to transport rock, dirt or sand over maintained hauls at speeds up to 34 MPH. Capacities range to 29 cu. yds. or 45 tons. Positive dumps are made to either side—on the go. High-tensile steels keep maintenance costs low.



OP ADE BOCK-STUDDED TRAILS

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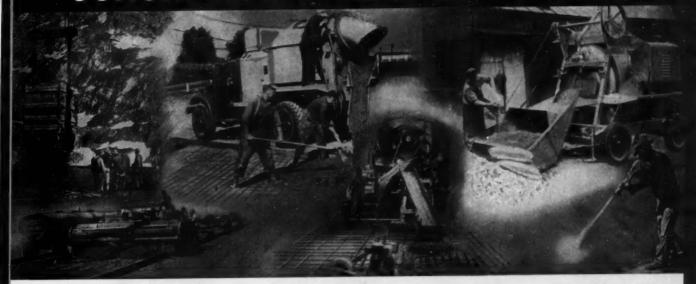


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CONCRETE MIXING AND PLACING



5. Highway and Airport Concrete Plants

By THEODORE B. APPEL, JR., Chief Engineer, The C. S. Johnson Co., Subsidiary Koehring Co.

Part 2... Batch Records

• A record of the weights of materials going into each batch is desirable. A recorder will reduce the necessity for the inspector to check each and every batch carefully. In paving work, the center of interest is the site of paver operations, not the batch plant. In fact, the batch plant often is considered a necessary evil. The chief inspector can deploy his men to better advantage if a dependable recorder is making a record of the batch-plant operations.

A batch recorder makes a record which may be kept and studied at any time in the future should failure of the slab occur; or, on the other hand, should the pavement give unexpectedly long life with a minimum of maintenance costs. In this way it contributes to the scientific study of concrete pavements. In addition, governmental bodies are responsible to the people. It becomes exceedingly prudent for a highway department, at state or

local level, to have on hand an accurate, dependable record of operations.

Automatic operation and recording involve a considerable expenditure for the contractor. Up to the present the demand for these units has been light and the number of units produced has been small. With increased interest, it is expected that the cost per unit gradually will decrease as a result of improved designs and from the economies of larger production.

Aggregate Hauling, Unloading and Storage

Whether aggregates are delivered to the batching plant by railroad or by trucks, handling at the site is similar, with a few exceptions. If the aggregate is received in gondola cars rather than in hopper bottom rail cars, a crane and clamshell will be required for unloading. Aggregate delivered by truck can easily be placed directly in storage. If no storage other than that provided by the bin is required, the trucks can dump into a

pit or pocket from which the material can be transferred to the bin

Haulage by truck is to be preferred except where the length of haul is so great that truck haul is uneconomical. The advantages of truck haul are:

- 1. The operator can better coordinate the delivery of aggregate to the needs of the job. In case of a prolonged interruption of paving operations he can shut off the supply of aggregate more readily than would be the case if the aggregate were delivered by railroad car.
- 2. There are no demurrage charges.
- 3. Trucks allow the selection of a batching-plant site which is best for batch-truck operations. Site location is not limited to available rail sidings.
- 4. Modern paving operations consume materials at such a rapid rate that a large number of cars would be required to supply the aggregate for one day's operation—in turn requiring a long siding. Sid-

(Continued on page 124)

Breaking pavement — with a Tractair-powered Model 52 Le Roi-CLEVE-LAND Paving Breaker. This tool, designed for heavy-duty work, is ideal for breaking the toughest concrete. Operators like its easy-handling power.



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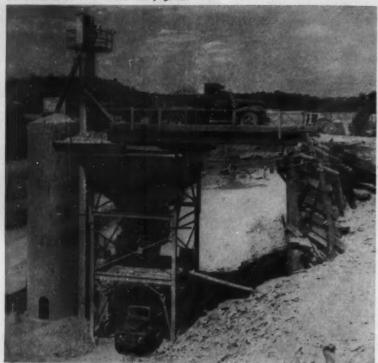
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HILLSIDE RAMP makes it handy for trucks to dump aggregates into top of bin of Johnson automatic batch plant. There are three aggregate compartments, a central cement compartment, three single-material aggregate batchers and a 1,000-lb cement batcher.

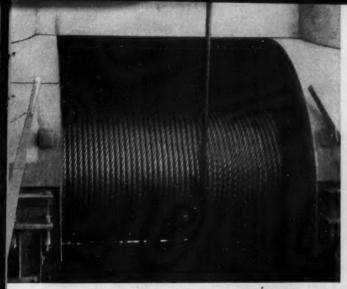
ings which can be used exclusively for aggregate car storage are not readily found. If it is impossible to haul the aggregate by truck, it may be necessary for the contractor to construct a suitable siding, at considerable cost to him.

 With truck hauling of aggregates taking over, the insistence on storage at the batching plant is decreasing. There are only two reasons why storage was required in the past; to insure enough aggregate being on hand for uninterrupted operations and that the moisture content of the aggregates will be relatively uniform. The dependability of truck haul and the ease with which rate of delivery can be coordinated with rate of consumption eliminate the need for large stock piles. Storage to provide uniformity of moisture can readily be provided at the aggregate preparation plant.

The elimination of extensive storage from specifications wherever possible is a good thing because it allows the operator to locate his plant on desirable sites.

With no need for extensive stor-(Continued on page 126)









OVERCOMING ABRASION—Wire rope takes a beating on some jobs by abrasion. It is squeezed in multiple layers under tremendous pressure on rotary drilling drums in the Texas oil fields. In the Northwest it drags under heavy logs.



In this Arizona mine it is scraped over rocks to operate a slusher. Everywhere it is rubbed severely on winches that do not wind smooth. Under such conditions Red-Strand 6 x 19 Seale wire rope will last longer and save you money.

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CONCRETE . . . Continued from page 124



TIMBER AGGREGATE BINS were a common sight in the early days, but the principle of separate compertments charged with a clamshell was established. Here, aggregates arrived by rail.

age at the batching plant, the operator is free to select a less expensive means of charging his aggregate bin. Crane and clamshell charging ties up an expensive piece of equipment and adds an operating engineer and oiler to the labor force. A plant set up for truck delivery, discharging into a hopper over a belt conveyor which, in turn, charges the aggregate, often will result in a considerable saving. Belt conveyors used for this purpose should be highly portable. Less capital is tied up in this aggregate handling equipment. Furthermore, the danger of contamination of materials, such as occurs when swinging a loaded clamshell bucket over one compartment of a bin, is or can be entirely eliminated.

The accompanying table of recommended bin sizes and charging data shows minimum recommendations as to size of clamshell bucket to insure uninterrupted operation of the pavers. Again, it will be noted that aggregate handling units are keyed to the paver.

When selecting a bin for batchplant operations on highway and airport paving jobs, except for the relative elaborate one-stop plant, the contractor should consider portability, size and compartment arrangement. Portability and adequate size do not go hand in hand. The highly portable bin generally is too small for proper operations. A bin of adequate size cannot be made fully portable.

The operator must make a selection of a bin which is adequate in size yet which has, through its design and fabrication, the feature of being set up, dismantled and moved with the least amount of trouble. And it should require no hauling equipment other than that which he already owns. In general, the bin should be fabricated of relatively large sections which fit together with a minimum number of bolts. This may result in sections which will require either a relatively large crane or two small rubber-mounted cranes for erection. Such hoisting units can bring extra saving through the use of a bin made of large sections.

Road builders' bins invariably are of the tandem type—several compartments extending across the width of the bin. This compartmentation lends itself to crane with clamshell bucket charging, and also to the portable conveyor belt setup. An important consideration is whether the bin is to be arranged for two, three or four compart-

(Continued on page 130)

Roadbuilders' Bins

Recommended Size

CHARGING DATA

PAVER	Min. Bin Size	Clamshell Bucket Size	Crane Size	Boom Length	Operating Radius
One 27E Single Drum	75 Ton	3/4 Yd	3/4 Yd	45 Ft	40 Ft
One 34E Single Drum	75 Ton	1 Yd	1 Yd	45 Ft	40 Ft
One 16E Dual Drum	50 Ton	1/2 Yd	1/2 Yd	40 Ft	35 Ft
One 34E Dual Drum	100 Ton	13/4 Yd	11/2 Yd	50 Ft	42 Ft
Two 34E Dual Drum	190 Ton	3 Yd	21/2 Yd	60 Ft	50 Ft

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concrete... Continued from page 126 ments. Approximately 50% of the states specify three aggregates for slab concrete. It follows that the aggregate bin should have three compartments. Remember that a three-compartment bin also can be used for the storage of two sizes of aggregates, but a two-compartment bin can never be used to store three separate aggregates.

• Batchers were discussed in previous articles in this series. A multiple batcher, manually operated and designed to batch three aggregates for a 34E paver, will have a capacity of about 75 batches per hour.

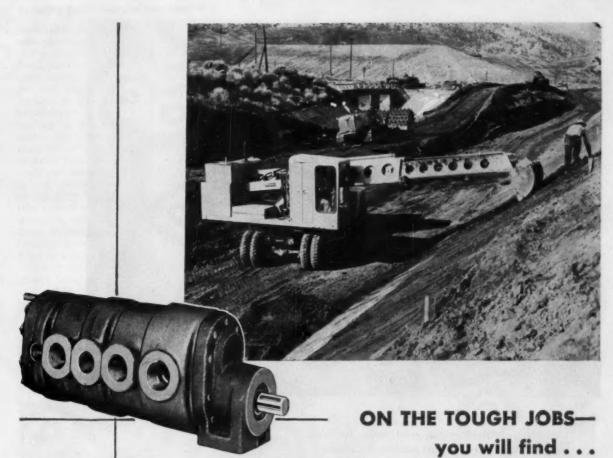
Certain of the batching plants, which are set up for high-speed operations, will have two multiple batchers mounted side by side. This arrangement allows the charging of two of a batch truck's compartments simultaneously, speeding up batcher truck loading materially. Using two operators, it is possible to maintain a daily average of approximately 120 batches per hr and to attain a peak production of 160 batches per hr. This type of operation is sufficient to take care of two 34E dual-drum pavers and can be used to advantage with one 34E paver.

Cement Handling and Storage

For paving operations only two types of cement handling facilities are to be considered, both highly mechanized. They are the inclined bucket elevator plant and the more conventional plant consisting of an undertrack screw, vertical bucket elevator, and a storage silo, beneath which is hung the cement batcher. The conventional plant may have an auxiliary storage silo. Inclined bucket elevator plants are designed to receive the cement from a hopper-bottom railroad car; the car is used for storage. These units lend themselves best to paving operations on a smaller or more restricted scale.

Inclined bucket elevator plants are highly portable. They do not tie up a large amount of the contractor's capital. Against these two advantages must be balanced the possibility of rail-car demurrage charges and the difficulty of coordinating accurately the delivery of cement by rail with paving operations. This plant is less adaptable to truck delivery of cement from the mill because it is not always

(Continued on page 133)



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Page 132 — Construction METHODS and Equipment — March 1954



possible to tie up a trailer unit for cement storage.

The prospective purchaser of cement equipment for paver operations should consider portability. As with aggregate bins, it is important to buy a plant fabricated of relatively large sections and requiring a minimum number of bolts. The capacity of the undertrack screw conveyor and bucket elevator must be more than sufficient to handle the cement required. Normally a plant capable of handling 250 bbl an hour will take care of most paver operations. However, where two 34E dualdrum pavers are used, unloading facilities should be capable of handling at least 400 bbl per hr.

The primary cement storage should have a minimum capacity of 400 bbl if cement is delivered by hopper-bottom rail cars, and 250 bbl if cement is delivered by truck-trailer. Both of these figures are based upon a storage of 150% of the capacity of the haulage unit. Whether to provide additional storage in the primary unit or to provide additional storage in the auxiliary silo depends upon availability and dependability of the delivery facilities from mill to batching plant.

High Production

A 14-cu ft, 1,000-lb, manually operated cement batcher suspended beneath the main storage silo for cement is the conventional unit for batching of cement for paver operations. Two of these mounted side by side, like the aggregate batchers, allows charging of two batch-truck compartments at the same time and are sufficient to take care of high-speed paving operations.

Approximately 60% of the states do not require a separate cement box, allowing aggregates and cement to be hauled in the same compartment in batch trucks.

· Fully enclosed and locked cement batchers are required in certain states, so that the batcher operator cannot influence the weighing of the cement in any way. While it is appreciated that this requirement is an attempt to guarantee a full and complete batch of cement in each batch of concrete, it seems that certain disadvantages outweigh the advantages. In the first place, man has never yet been able to devise any system which will prevent fraud. True, many requirements reduce the likelihood or make it more difficult. Enclosing

the batcher materially increases the first cost. The enclosure also makes it more difficult to maintain the equipment in first-class condition.

It is the author's opinion that the benefits of accessibility of equipment, coupled with adequate inspection of the batching operation, is more likely to result in a better result than that produced by enclosed batchers. Interlocking of the gates, often specified to prevent faulty batching, has much merit and must be recommended.

The conventional batch truck is

so familiar to everyone interested in paving that a description is hardly necessary. Hinged compartment plates which divide the truckbed into two, three or four compartments usually are designed and built by the contractor in accordance with his ideas, or in accordance with practices he has observed on paving operations. The separate cement container, required by many states, likewise is generally built by the operator rather than purchased as a piece of equipment. As a result, these containers are



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Dept. G 156 N. 5th St. Columbus, Ohio CONCRETE . . . Continued

of various sizes, shapes and arrangements, most of which seem to operate with high efficiency.

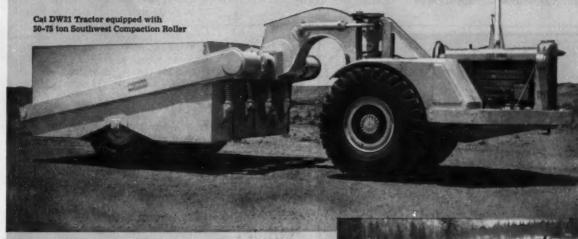
Paver-Mix vs Ready-Mix

Many miles of pavement have been poured with concrete produced in ready-mix plants and hauled in transit-mix or agitator trucks. Most state specifications are written to permit this type of operation. Under certain circumstances it is definitely and advantage to pour pavement using readymixed concrete. However, like every other tool, the ready-mix plant has its limitations.

The next article in this series is devoted to a discussion of readymix plants. But the advantages of paver mixing for highway and airport pavements over ready-mix plants will be enumerated here.

- 1. It is easier to gear paver production to placing and finishing operations. If the inspector interrupts production due to disapproval of subgrade, or if finishing operations are slowed up, the production of concrete can be cut off immediately when a paver is used. If the operation were a ready-mix plant operation, the concrete in all the haul units between the plant and paving site would present a disposal problem.
- 2. The volume of concrete required for high-speed paving would tax the capacity of many ready-mix plants.
- 3. A large paving contract will interrupt normal operations in a ready-mix plant. The bread-andbutter business of a ready-mix plant consists of calls for concrete for miscellaneous purposes in the community in which the plant is located. No ready-mix operator can afford to refuse concrete to his community because he happens to hold a contract for the production of concrete for a near-by road
- 4. High-speed finishing machines require a consistent concrete. The paver, because it produces one batch after another of exactly the same mix, is well adapted to meet this requirement. With transit-mix trucks the responsibility of maintaining consistency is placed in the (Continued on page 136)

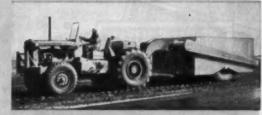
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To suit varying job requirements the hauling yoke is sectionalized for adding or subtracting weight boxes...the yoke is also flanged to permit changing the draft beam assembly ... and the weight boxes can be filled with any material to obtain desired total weight. Sizes and capacities range from 10 to 100 tons. Write for compaction data covering various types of soil and for illustrated literature.





CONSTRUCTION MACHINERY DIVISION

Southwest Welding

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CONCRETE . . . Continued from page 134

hands of many men. It is difficult to get all drivers to operate their transit-mixers exactly alike.

5. A paver eliminates the cost of many transit-mix or agitator units. The use of batch trucks simplifies and greatly reduces the cost of haulage units. When the haul is long, many trucks can be readily pressed into service. As the haul decreases, the standard dump trucks used as hauling units can be withdrawn and used for other purposes.

Gradual changes are apparent in

highway and airport paving. It seems likely that the insistence on sandwiching the cement between the aggregates will become more pronounced. It is certainly a more efficient way than dumping cement on top of the aggregates. And sandwiching has certain advantages over the separate cement container.

It is quite likely that the future will see an increase in the use of portable and semi-portable conveyors to replace the conventional crane and clamshell bucket used to charge the aggregate bins. The rate of change will depend to a large degree upon the initiative and ingenuity of equipment manufacturers.

Because many paving operations require high capacity and rapid completion of the contract, more and more one-stop plants are indicated-designed specifically for paving operations.

There should be many more paving projects operating on a twoshift basis. Heavy construction has found day and night operation entirely practical. The advantages that apply on heavy construction projects apply also to highway paving. Because the motorist is affected directly by paving operations and attendant inconveniences, there seems to be even more reason for two shifts on highway jobs than on any other construction op-

CURVE AHEAD EDUCE SPEED 20 MPH

It doesn't pay to take chances when buying a mixer either!

Taking chances on highways and streets costs America 2,092,000 casualties annually.



 You know just what the performance of a Mixer will be when it's AGC RATED!

For to wear the AGC plate, portable concrete Mixers and Pavers must meet rigid specifications as to sizes and mixing capacity.



Be sure the Mixer you buy is AGC RATED!

Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY

CONSTRUCTION MACHINERY CO.

BLAW-KNOX COMPANY

THE JAEGER MACHINE CO.

THE KNICKERBOCKER CO

KOEHRING COMPANY

KWIK-MIX COMPANY THE T L. SMITH COMPANY **WORTHINGTON CORPORATION**

Plainfield, New Jersey

Brother! Here's a **Costly Accident**

eration.

HERE'S A REPORT of an accident given us by the National Safety Council that clearly illustrates how just a small negligent act can create a chain of events that results not only in personal injury, but damages, not covered by insurance, amounting to more than \$13,000.

Here's what we mean: A crane operator slipped on an oil slick which he had neglected to wipe up. He struck his knee and was laid up for three days. No compensation cost but his medical aid amounted to \$12.50.

But look what happened in addition to the crane operator's injured knee. When this seemingly minor accident occurred, his crane along with another unit, was placing a long and deep bridge girder. His accident prompted him to forget all about the load he was lifting, so he dropped his end.

Now wait, that wasn't all. The sudden drop of the load on one end collapsed the boom of the crane on the other end which, in falling, pulled down power and telephone

There's still more. The power lines supplied energy to a near-by textile mill which had to shut down for 15 hr. This led to a claim against the contractor for more than \$7,500.

The indirect cost to the contractor from this one minor accident was more than \$13,000. All because a crane operator did not take 2 sec. to wipe up a spot of oil.



"Save money?

Sure!

THAT, in a nutshell, tells you why so many wire rope users in excavating and construction prefer Roebling wire rope ...it speeds up operations...lasts longer on the job ... saves money that really adds up.

For the last word in wire rope efficiency and economy, call your nearest Roebling office or distributor for a Roebling recommendation.



JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, M. J. BRANCHES: ATLANTA, 934 AVEN AVE. . BOSTON, SI SLEEPER ST. . CHICAGO, SS35 W. RODSE-VELT RD. . CINCINNATI, 3253 FREDONIA AVE. . CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. . DENVER, 4801 JACKSON ST. . DETROIT, 915 FISHER BLDG. . HOUSTON, 6315 MAVIGATION BLVD. . LDS ANGELES, 534D E. HARBOR ST. . HEW YORK, 19 RECTOR ST. . DDESSA, TEXAS, 1920 E. BND ST. . PMILATER, 250 VINC ST. . SAN FRANCISCO, 1740 17TH ST. . SEATTLE, 900 18T AVE. S. . TULSA, 321 N. CHEVENNE ST. . EXPORT SALES OFFICE. TRENTON 2, N.J.



RE YOU still plodding along with a "horse & buggy" surveying instrument?



PROGRESSIVE SURVEYORS

use modern WILD instruments for matchless precision and operational speed . . . for Substantial MAN-HOUR SAVINGS!

Set Yourself "Up to DATE"
MAKE A DATE WITH OUR **DEMONSTRATION STAFF** to handle a modern WILD instrument. We will arrange to show you the unmatched performance of WILD Transits, Theodolites, Levels and other surveying equipment...in action under field conditions.

HEERBRUCE has THE MOST SUITABLE modern surveying instrument for your specific job or for universal application. WILD instruments are known through-out the world for:

- ★ Ease and speed of handling
 ★ Fool-proof design and maximum reliability
- * Lasting trouble-free operation
- * Light-weight, rugged construction
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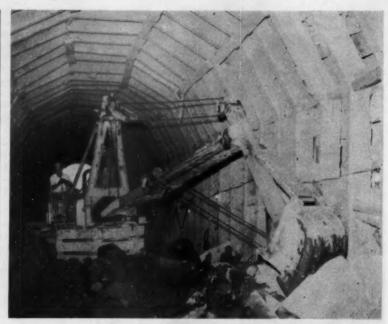
See For Yourself! Contact Dept. CO3

MAKE A DATE WITH WILD...the world's largest manufacturer of precision surveying instruments.

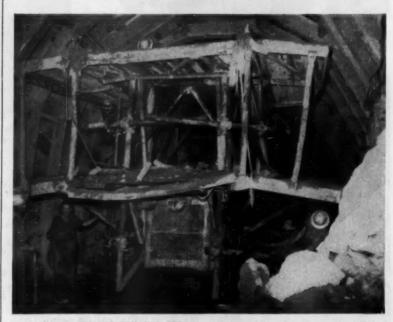
Extensive repair and servicing facilities by factory trained specialists.

SURVEYING INSTRUMENTS SUPPLY CO OF AMERICA, INC

MAIN & COVERT STS., PORT WASHINGTON, N. Y. POrt Washington 7 4843



BECAUSE OF A SLOPE in the tunnels, plus their small diameter, the usual methods of removing the loosened material could not be used. The problem was solved by using a Caterpillar diesel tractor equipped with a Hystaway backhoe rig.



PORTABLE BLAST-HOLE DRILLING RIG mounted on a Caterpiller D8 tractor drilled a round of blast holes and then moved on to the next funnel. The operation was repeated in tunnels 2 and 3, and then the rig returned to tunnel 1 for more drilling.

Tractor Backhoe Mucks Out Rock at Tunnel Face



BECAUSE OF THE SHARP SLOPE of the funnels, rolling rock was a problem. This protective plate around the hoist unit of the Hystaway rig protected it from damage. Short rugged boom and maneuverability of crawler tractor were ideal inside 20-ft tunnel.



AFTER THE HYSTAWAY-EQUIPPED CATERPILLAR had pulled the loose rock away from the face of the tunnel, this Caterpillar D8 bulldozer pushed the rock to the spoil pile. Rock was not loaded inside short tunnel, could be short and removed in large chunks.

THE FOLSOM DAM and power-house projects near Sacramento, Calif., have had more than their share of unusual construction methods and problems. One of the most interesting phases took place during the construction of the penstock tunnels on the powerhouse job.

This U. S. Bureau of Reclama-

tion project has three tunnels, 346 ft long and 20 ft in dia, carrying steel penstock liners through an unexcavated area from the dam to the powerhouse. Because of a 39% slope in the tunnels, plus their small diameter, the usual methods of removing loosened material could not be used.

Guy F. Atkinson Co., general



Pleased customers have used OK Air Compressors for years, under daily and continued "slam-bang" operations. They have found OK Compressors give them dependable, economical, trouble-free service—no matter how tough the job. Take advantage of our lowered prices.

Compressors are available in three sizes—105, 160, and 210 cu. ft. of air per minute. OK Compressors

cre either gasoline or diesel powered, and built in one or two stage types.

OK also builds a complete line of heavy duty Hoists, Winches and Portable Elevators.

Write today for complete information on OK Air Compressors, OK Hoists, OK Winches, and OK Portable Elevators.



1974 Florence St. Columbia, Pa.





"... well pleased with performance of these units"

C. F. LYTLE COMPANY—big, well-known contractor of Sioux City, Iowa, have recently installed their third Nordberg Diesel Engine Generator Set, which have all been used for lighting on three different power shovels. Reports show that they are "well pleased with the dependable performance of these Nordberg units".

Experienced contractors like C. F. Lytle Company have to be sure that their equipment stays on the job—day and night—that's why more and more operators are using Nordberg "4FS" Diesels for shovel lighting—for energizing crane magnets—for powering small shovels and cranes—and for scores of other heavy-duty construction jobs.

Clip and mail the coupon for free literature.

C. F. Lytle Company have installed Nordberg one-cylinder Diesel Generator like this in three power shovels—two P&H units and one Marion.

Built in 1, 2 and 3-cylinder sizes from 10 to 45 hp, Nordberg heavy duty medium speed Diesels are available as straight power units with stub shaft er clutch power takeoffs—as generator sets producing from 6 to 30 K.W.—and as "packaged" centrifugal pumping units.

NORDBERG MFG. CO., Milwaukee, Wisconsin

NORDBERG

9

MAIL COUPON FOR DATA Nordberg Mfg. Co., Milwaukee, Wisconsin

Send me full details about your "4F5" Diesels for construction service.

ty______State_____4-154-(

BACKHOE MUCKS . . . Continued



TO ELIMINATE harmful exhaust products scrubbers were mounted on the tractors.



MECHANICAL BRAKE installed on the Hystaway unit gave double protection.

contractor on the powerhouse, hit upon the idea of using a Hystaway backhoe, mounted on a Caterpillar tractor and modified slightly to fit the unusual application.

First the portable blast-hole drilling rig mounted on a Caterpillar D8, moved into a tunnel and drilled the blast holes. This tractor also was equipped with a compressor. It backed out and moved on to the second tunnel and repeated the operation and then repeated again in tunnel three.

Next the holes were shot and the Hystaway-equipped Cat went in and with the backhoe shoveled loose rock away from the face.

Finally, another Cat D8 bull-dozer moved into the tunnel and pushed shot rock to a spoil pile at the mouth of the tunnel.

After these three operations had been completed, the drilling rig had finished its job in the second and third tunnels and was back ready to resume work on the first tunnel.

This highly efficient method of tunnel driving and rotating equipment moved 12,000 yd of rock in 55 days, working on a round-theclock schedule.

"We recommend reoiling Plyform with the fine oil we use... UNION."



Howard A. Cusic, purchasing agent, Multnomah Plywood Corporation, Portland, Oregon

"We've found that Union's Red Line 100 Oil gives the deep, even oil penetration of both faces which contractors require of Plyform panels for concrete forming use.

"Since we started treating with Union we have

not received a single complaint of sticking or other service failure. For longest service life, we recommend reoiling Plyform panels between each job with the same fine oil we use for initial treating... Union."

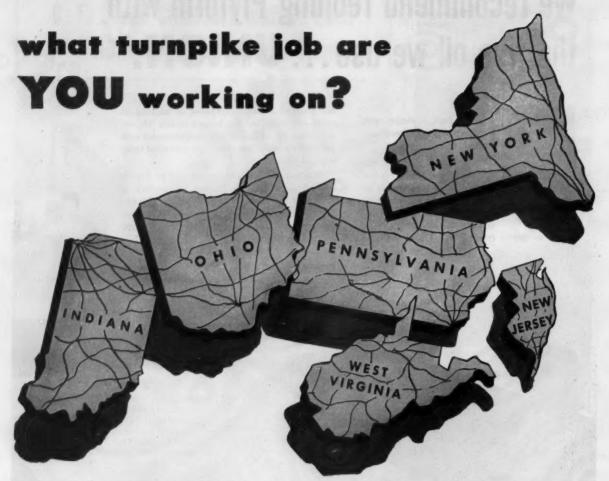
Whether it's a special purpose oil or day-in, day-out, dependable lubrication you're looking for, you'll find it pays to consult your Union Oil representative. He can recommend the petroleum products that save you money by doing the job better. Call him and see.



UNION OIL TO COMPANY OF CALIFORNIA

LOS ANGELES: Union Oil Bldg. • NEW YORK: 45 Rackefeller Plaza • CHICAGO: 1612 Bankers Bldg. ATLANTA: 401-92 Atlanta Hatlooel Bldg. • NEW ORLEANS: 644 National Bank of Commerce Bldg.

March 1954 — Construction METHODS and Equipment — Page 141



There's a great variance in specifications established for the Turnpike projects to be built this year. All, however, represent the most advanced thinking of the country's top-flight highway engineers.

BUTLER has kept pace with the requirements involved. You can have a BUTLER Roadbuilders Plant designed precisely to meet every innovation and every exacting specification. Moreover, your BUTLER Plants will provide great economies in faster, fool-proof automatic batching. They're as modern as the highways they help to build. For a full description of all the features BUTLER provides — write for Bulletin 205. Do it today — as a first step in getting an extra profit from your Turnpike job.



Here is BUTLER Bulletin 205—Not only shows up-to-the minute features of BUTLER design — but also WHY BUTLER Plants are famed for their unusual portability.

BUTLER BIN CO.

949 BLACKSTONE AVENUE Waukesha, Wisconsin

Four Passes Widen Road

• A well-received road widening tool, originally designed by a contractor in the Mid-West and later perfected and manufactured by Ulrich Products Corp., Roanoke, Ill., is the DoMor Road Widener. This tool attaches directly to the blade of either a Caterpillar No. 12 or 112 motor grader with only two bolts.

It operates with regular blade controls; will cut from 1 to 6 ft wide and from 9 to 12 in. deep. The DoMor attachment requires only 4 passes with the motor grader to cut the road widening trench and bring it to finish grade to receive concrete.

Here, in pictures, is how it's done:



1 ON THE FIRST PASS, the motor grader cores out the trench next to the pavement. The toe of the blade is placed against the edge of the pavement with the heel about 20 in. off the ground.

The depth of cut should be within 2 in. of grade if the width of the trench is to be 3 ft, or less. On wider trench, the cut should as near to grade as possible.



2 MAKE A TURNAROUND, reverse blade and start second pass, dropping the toe of the blade into the ground about 20 in. away from the edge of the pavement. Keep the same depth of

cut as in the first pass with the heel of the blade about 12 in. off the ground. This second pass completes coring of trench and carries material to the outside edge. (More photos on next page)

SHORING COSTS CUT 50% ON THIS JOB

 Many construction companies save up to 50% of normal shoring costs by utilizing these original sideswing clamps designed for faster, lower-cost shoring.

With the E-Z system of shoring, you can use 2x4's or 4x4's over and over... unskilled labor can shore-up in the same time and with the same accuracy as

skilled men without measuring, sawing, nailing or wedging!

E-Z Shore Clamps are available on outright purchase, on a rental basis or on rental-purchase agreement. Write today for complete details on how YOU can cut shoring costs 50% or more.

Mail Coupon Today!

	WEST	ERN	SA	LES	&	SU	PP	LY
--	------	-----	----	-----	---	----	----	----

4615 Washington Denver, Colorado

- Gentlemen: Please send complete details on E-Z Shere Clamps on the following:
 - () Direct Purchase
 - () Rental Basis
 - () Rental-purchase Basis.

We would use approximately____pair.

firm Name.....

Address

City_____Zone___Stat

y_____Tit

FOUR PASSES . . . Continued



ON THE THIRD PASS the DoMor Road Widener is used. Blade inserts make it adjustable for cuts ranging from 1 to 6 ft in width. Adjusting bolts control depth of cut which can be varied from 9 to 12 in. If a lighter cut is required, shims are placed under the gage rollers. Drop the road widener into the trench as deep as possible.



4 GUIDE THE MOTOR GRADER so the point of the road widener is against the edge of the pavement. This gives a scouring action which cleans out all foreign substance and guarantees a good bonding surface for fresh concrete.

(More photos on page 146)



5 AFTER THE THIRD PASS has been complete, deadhead back and start the fourth pass with the road widener at its maximum depth, using blade down-pressure, forcing gage rollers into contact with the pavement. Keep guiding the motor grader so the point of the road widener is against the pavement. This pass will bring the trench to grade. If necessary, a roller can be pulled by the motor grader on this pass to help compact the bottom of the trench. The trench is now ready to receive concrete.



It costs time and money to be ONE DIPPER LATE!

Amsco manganese steel dippers are regularly ordered for replacement on equipment in the field. Often they go to users who found that ordinary steel dippers simply would not hold up.

It's smart economy to specify tough,

dependable Amsco dippers with original equipment.

Next time you order a power shovel or a replacement dipper, specify long life right on your purchase order...specify an Amsco manganese steel dipper.



AMERICAN MANGANESE STEEL DIVISION Chicago Heights, III.



6 CONCRETE IS HAULED BY TRUCK to the spreader from a central batch plant—dumped into the spreader hopper and conveyed to the spreader box as required. The spreader box is the exact width of the tranch. Concrete is screened and sealed.

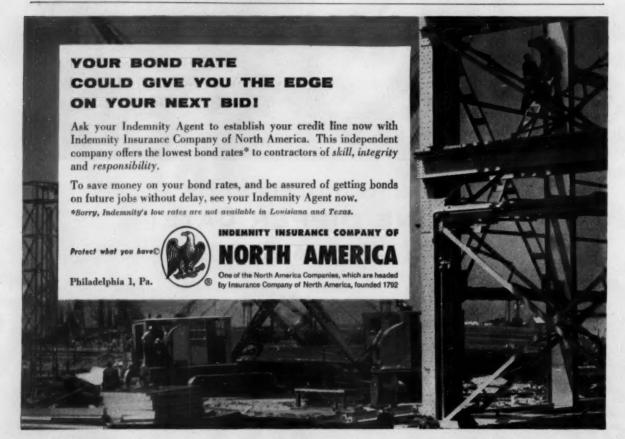


7 HERE'S THE FINISHED JOB. The exact width of trench required has been opened, with no surplus material removed.

Self Defense for Phone Company

AROUND DES MOINES, IOWA, the telephone company writes letters periodically to contractors asking them to call a certain free number when planning to do some digging. The telephone people then check the area under discussion

and dispatch a crew by radio, in case a cable or some other underground equipment has to be protected against damage. The phone company operates its service on a 24-hr, 7-day week basis but prefers ample advance notice.

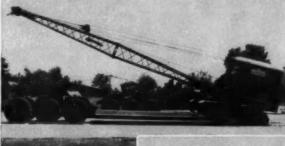


There is no easier way to load a trailer...

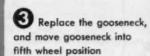
than the TALBERT WAY

Removing the gooseneck to permit easy front end loading





No hard-to-handle ramps to place in position—simply "drive the crane on"





Shown here a Talbert Trailer Model T3D—60—RG-RA, owned by the BUCTON CONSTRUCTION CO., Hazen, Arkansas



60 Ton Capacity, drop side deck, removable gooseneck, removable third axles . . . with single axle jeep dolly.

Write for New Talbert Catalog No. 104



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers.

THE TALBERT-WAY IS THE EASY WAY



Another Auction...

...Inconclusive Results

ANOTHER AUCTION SALE of construction equipment, this time in Houston, has come up with inconclusive results. Prices were spotty, some too high and some too low. No discernible pattern of prices could be found in it because the equipment generally was low

both in numbers and quality. There was no liquidation of any extensive equipment spreads.

Like the Boston sale (CM&E, February, p. 90) the auction was conducted by Ross & Ross, of Minneapolis, who ballyhooed it well. Advance advertisements stated that the sale would be "at Brown & Root Inc., Tank Division yard and building." This led some prospective purchasers to believe that Brown & Root, one of the country's leading contractors, was liquidating a sizable amount of equipment. Actually, say B&R, they just made one of their empty yards available for the display of equipment, and only about 10% of the stuff auctioned was theirs. (The auction itself was held in a ballroom a mile or so from the display yard.)

The ads also misled many into believing that more equipment would be put on the block than actually was. They stated that "over 100" graders would be for sale, for example, but only 17 were offered. Similar comparisons for other machines: Compressors, over 100 vs 42; welders, over 100 vs 37; tractors, over 155 vs 60 (of which more than a third were wheel tractors, and the rest mostly medium and small crawlers); trenchers, over 25 vs 5; cranes and shovels, 55 vs 20.

Some Prices

As for quality, it varied from new to junk and included top makes as well as less popular brands and models. One dealer estimated that only 5% of the construction equipment auctioned was in excellent condition, with the rest split about evenly between good and poor. "I wouldn't put up really good equipment," he added. Even auctioneer Percy Ross admitted publicly while touting one machine, "We usually get poor merchandise but this unit is in excellent condition."

Perhaps indicative of the condition of the machines were some of the prices: Rex 27-E paver, \$175; %-yd clamshell bucket, \$75; International TD-9 dozer (Serial 1697), \$650; Caterpillar D4 (Serial 5T-1082) with Eimco C Rocker Shovel, \$550; Adams 511 grader (Serial 330), \$900; Gardner-Denver 210-cfm compressor (Serial 88602), \$525; Northwest 15 dragline (Serial 4422) with 35-ft boom and Page %-yd bucket, \$1,000.

Prices were spotty—some buyers got bargains and some got stuck—but seemed generally to be below expectations of the sellers. Equipment that normally would be expected to bring a low price appeared to sell for more than its value; the higher-cost units seemed to sell under par.

Top tractor price was \$6,500 for an International TD-14A (Serial (Continued on page 151)



THE SNOW-NABSTEDT GEAR CORP., HAMDEN, CONN.

Here's why an AUSTIN-WESTERN power grader gives you 30% more power at the blade and twice the maneuverability



Much of the time, All-Wheel Drive and All-Wheel Steer work as a team to provide CONTROLLED TRACTION. In this position, the rear drivers push behind the toe of the blade; the front drivers pull ahead of the heel of the blade, and the machine moves straight ahead with a load on its blade that would cause the ordinary grader to become unmanageable.

On the ordinary front steer, rear drive motor grader, the front end is just that much dead weight which the rear end has to push around. *Total* weight is not the measure of motor grader operating efficiency. What counts is the useful working weight carried on driving wheels; all other weight consumes power, and is a definite handicap.

On the Austin-Western Power Grader, there are no idling front wheels . . . no dead front end to consume power and decrease operating efficiency. All weight is on driving wheels—front and rear—contributing 100 percent to traction. Dynamometer tests, conducted with the greatest accuracy, have proved conclusively that with two graders of the same weight and horsepower, working in

first or second gear where real earthmoving is done, an all-wheel drive machine has 30 percent more power-atthe-blade than one with rear drive only.

With its ability to steer both ends of the machine in the same direction or opposite directions, the Austin-Western Power Grader has twice the maneuverability of other graders; works around short-radius curves impossible for machines with front steer only; turns easily on narrow roads and trails, and maneuvers more closely around culverts, bridges and other obstructions.

Spring and Summer, Fall and Winter, the A-W Power Grader outperforms all other motor graders . . . on all types of work, and under all conditions.

Austin-Western

Power Graders • Motor Sweepers Road Rollers • Hydraulic Cranes



AUSTIN-WESTERN COMPANY

Subsidiary of Baldwin-Lima-Hamilton Corporation

AURORA, ILLINOIS, U.S.A.

Construction Equipment Division

Concrete for Two Parking Buildings Pumped at ½ Original Estimate

Using a single 160 Pumpcrete, a wise contractor placed the concrete for two 11-story parking buildings—at a saving of ½ the original estimate for doing the job with towers and concrete buggies. The jobs were several blocks apart, but the readily portable Pumpcrete was easily shuttled between the two for alternate pours.

Located at basement level, Pumpcrete was readily accessible to truck mixers that delivered concrete to the site through the alley. Pipeline was run up floor by floor as fast as pouring progressed. Compare this simplicity with ramps, buggy runs, towers, and other cost-adding preparatory work.

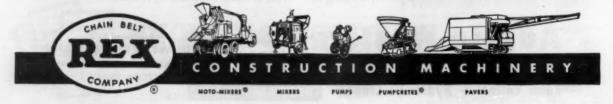
Important too, on a job such as this where job area is congested, was the absence of interference among the various trades. Form setters, steel setters, masons, electricians, etc., could work on schedule without being hampered by pouring crews and buggy traffic.



When you pump concrete . . . costs come down

IF YOU'RE INTERESTED in seeing other types of jobs on which Rex Pumpcrete has cut the cost of concrete placement, we will be happy to send you copies of "It was done with Pumpcrete."

There may be helpful data you can use to cut costs on your jobs. See your Rex Distributor, or write Chain Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wis.



AUCTION . . . Continued from page 148

TDF 31239) with Bucyrus-Erie Bullgrader and Lufkin L60 winch in fine condition. Lowest was \$70 for a Cat 20 junker. A TD-24 (Serial 562) with B-E cable dozer and Lufkin 125 oilfield winch went for \$4,600, and an Allis-Chalmers HD-10W (Serial 6469) brought \$3,150.

Grader prices ranged from \$450 for an American 8-D (Serial 48082) to \$3,600 for a Cat No. 12 (Serial 9K90583) with scarifier. Highest compressor price was \$6,200 for a 600-cfm Chicago Pneumatic (Serial 51504) powered by a Cat D13000 diesel; a similar unit (Serial 51898) brought only \$2,500. Cheapest compressor was a LeRoi 105 (Serial 28059) at \$175.

In the excavator field, an old Northwest 8 crane (Serial 3920) brought \$3,500, as did a P&H Model 150 backhoe (Serial 12501) with a Buda diesel. This latter machine was knocked down for \$3,000 later in the auction when it was reoffered. A Bucyrus-Erie 15-B dragline (Serial 67667) brought \$6,900 and an overhauled Lorain TL-20 diesel dragline (Serial 16770) went for \$3,100. A littleused Osgood 200 hoe (Serial 6130) with GM 2-71 diesel went for \$5,950 the first time and \$5,750 when later re-auctioned. An unused Wayne 66 crane (Serial 3890) was knocked down for \$9,000, reputedly on a buy-back, for top excavator price of the sale.

Some Protection

Auctioneer Ross claims there were no buy-backs, although the printed conditions of sale did not say that owners would be prohibited from bidding on, or buying back, their own equipment. And Ross admits that at the time a machine was knocked down he could not identify the high bidder except by an assigned bidding number. Actually, there were some buy-backs and protective bids, in one form or another.

In some instances there were minimum prices set, although early advance advertising of the sale said "No price reservations, no reserves, no minimums by owners." This statement did not appear inlater ads or in the conditions of

Anyway, people came - and bought. One smaller contractor who traveled more than 1,000 mi to the auction and made some sizable purchases felt it was not

(Continued on page 152)



LOUISVILLE LADDER COMPANY 1101 W. OAK ST .- DEPT. E - LOUISVILLE 10, KY.



A completely new, heavy duty Tilt-Top' designed and built by engineers who pioneered the develop-ment of the easier loading Tilt-Top* for hauling

heavy equipment.

This new Tilt-Top is massively built from platform's rear edge to the gooseneck at the tongue. Chassis employs a heavy duty version of field proven MILLER tapered side channel design. And this big Tilt-Top is so precisely balanced

that one man can lift it effortlessly for hitching. Big oak platform (76" x 16") handles rollers up to 10 Tons... such big tractors as the D-4 and HD-5. See this NEW Tilt-Top' at your MILLER distributor today

Heavy box section walking beam gives rugged strength and independent wheel ac-tion on each side, assuring less jarring and level ride over rough terrain.

Model "BT-10" 10 ton \$2100.00* Camplete with platform, four 8.25 x 20 x 12 ply tires, heavy duty electric brakes, reflectors, lights and safety chains.

. Plus freight and federal tax

MILLED O	MAIL TODAY
MILLER : PROPERTY OF THE PROPE	Name Company Street
457S. 92nd Street, Milwaukee 14, Wis.	

YOU CAN'T DIG A TUNNEL WITHOUT IT



Ventilation is one of the ingredients you can't do without in underground construction. And when it comes to dependable push-pull ventilation, you can't beat lines of Naylor light-weight pipe. Naylor pipe is easy to handle—easy to install, particularly with Naylor Wedge-Lock couplings, the quickest possible connections. Naylor pipe is also made for "high air" and water lines.

Write for Bulletin No. 507 on line pipe and Bulletin No. 514 on Wedge-Lock couplings for vent pipe service.



Naylor Pipe Company • 1268 East 92nd Street, Chicago 19, Illinois Eastern U.S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York AUCTION . . . Continues

right to set minimum prices or allow buy-backs (and this opinion was pretty general). But in spite of that, he was satisfied with the pieces of equipment he did buy and the prices he paid for them. This, too, was a pretty general opinion of the buyers.

As for the people who put the equipment up for sale, they didn't seem too unhappy. Some dealers got much-needed cash, others cleared their yards of stuff they couldn't move otherwise. Some did both. One realistic dealer sold two pieces of equipment at 60% of his book value and less than 35% of what he'd been trying to sell them for at his yard. Another item, however, went for 23/4 times his book value. One contractor on the selling end said the prices he received were just about what he expected-"But then we didn't expect much, because the equipment was old and off-brand.'

Machines Come Out of the Jungle

ENORMOUS DUMPS of construction equipment, left behind by rapidly advancing armies in the Pacific, and literally abandoned after the war stopped, have stirred the imagination. What to do to salvage these fine machines? Some of this equipment has been brought to U. S. shores and reconditioned.

Down under, an enterprising group slashed away the jungle growth on some islands containing construction machines and transported them to Australia. Many of them had not been used. Equipment was cleaned and reconditioned. There were eager takers on the pioneering continent, and the country's economy has been helped materially.

As late as July 1953, equipment was being hauled out of Dutch New Guinea. What is its condition after 8 yr in the moist jungle? Paint and oil did their job well. Although many light sheet metal parts like cabs were chewed by rust, engines and gear boxes have come through good as new. Internal parts covered with oil were kept shiny new. Rubber and other "perishable" parts were the only ones really affected.



Eaton's planetary gearing distributes pressure and wear over a number of small gears, resulting in lower unit stress. Forced-flow oiling system provides positive lubrication to all moving axle parts at slowest vehicle speeds. Extra heavy construction eliminates the possibility of distortion or misalignment under full loads. Practical, down-to-earth design makes maintenance quick, easy, economical. Simple shifting makes it easy for drivers to use all available gear ratios. The right ratio for every road and load condition; gives extra maneuverability, positive control at all times. The result of these Eaton features is long, trouble-free axle life, greatest possible vehicle utility at lowest possible cost.

EATON 2-Speed Truck AXLES

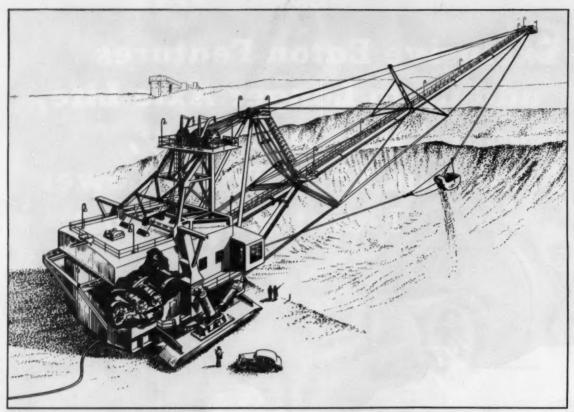
see your truck dealer.

Axle Division

EATON MANUFACTURING COMPANY

CLEVELAND, OHIO

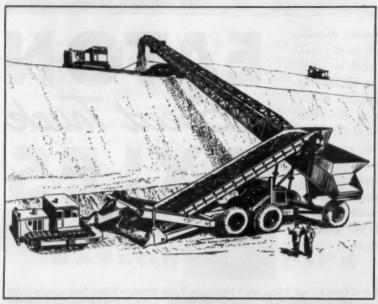
PRODUCTS: Sodium Cooled, Poppet, and Free Valves * Tappets * Hydraulic Valve Lifters * Valve Seat Inserts * Jet Engine Parts * Rotor Pumps * Motor Truck Axles * Permanent Mold Gray Iron Castings * Heater Defroster Units * Snap Rings Springtites * Spring Washers * Cold Drawn Steel * Stampings * Leaf and Coil Springs * Dynamatic Drives, Brakes, Dynamometers



HERE'S A SKETCH of a Russian-built walking dragline that probably would shame Rube Goldberg. Operated with 46 electric mo-

tors, it is supposed to excavate 1,000 cu yd per hr. It weighs 1,100 tons and features a pair of "walking feet."

Latest in Equipment...Russian Version



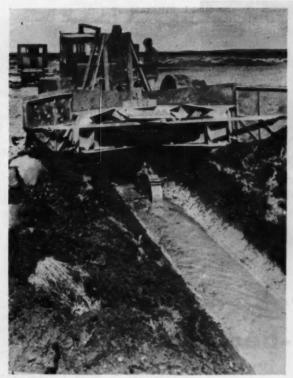
THIS SCRAPER-EXCAVATOR looks like a "grandson" of the Euclid loader. Called the D-264, the Russians say it will load 2,000 cu yd per hr and dig down to a depth of 43 ft.

REGARDLESS of what it is, the Russians usually get around to claiming they not only build things better, but also bigger than anyone else. Earthmoving equipment seems to be no exception if we are to believe the latest Soviet press releases and photos.

The photographs all appear to have one thing in common. The equipment seems to bear a strong resemblance to outmoded American-built equipment. Another unusual fact we noted in the photos was the white-wall tires mounted on the trucks, cranes and graders. Perhaps the Russian dirt is cleaner over there, so they can justify the use of such sporty tires.

One of the biggest giants the Russians are "testing" at the present time is a scraper-excavator called the D-264. From outward appearances, it resembles the tractor-drawn Euclid loader. This D-264 is supposed to have a capacity

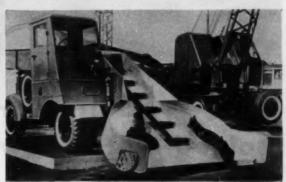
(Continued on page 156)



HIGH-SPEED DITCHING PLOW, being pulled by two husky looking tractors, is used to dig temporary trenches for agriculture work.



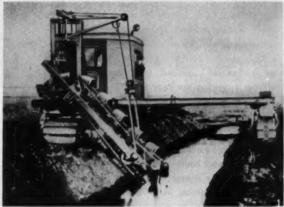
CRUDE AND ROUGH LOOKING OUTFIT is the Russian version of its cable-operated scraper. No production figures available.



HERE'S RUSSIA'S deluxe snow loader. Note the white-wall tires and don't overlook the spare tires on both rigs.



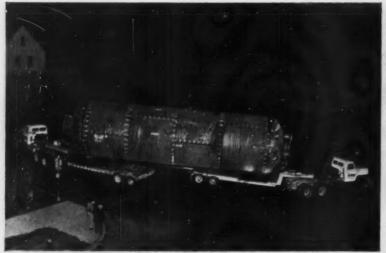
THIS IS A 4-CU YD EXCAVATOR depositing its load into a truck. LATEST MODEL of Russian road grader. It has wide Truck should be a little bigger for good operation, shouldn't it? filler pipe and same size white-wall tires all around.



HERE'S A MULTIPLE SIDE-BUCKET EXCAVATOR that apparently is used to clean ditches. Notice how it straddles the ditch.



LATEST MODEL of Russian road grader. It has wide seat with fuel



Milwaukee Journal Photos

Inicky hauling problem solved by two low-beds!

ngenious use of two LaCrosse low bed trailers—one traveling forward and one backing up—enabled SHEA MATSON CO., of Milwaukee to move this 66-ton steel vessel 15 miles in 8 hours, without mishap. Drum was lashed to flat beds with welded steel rods, plus a rugged king bolt arrangement, which let it "swivel" around tight corners, without upsetting the rear trailer.

Due to the unprecedented size of the complete convoy (100' long x 17'2" high), 2½ days were needed to precheck overhead clearances, turning radii, and load limits—along every foot of the 15-mile course. The move itself, requiring the utmost in driver skill and trailer dependability, was expedited by 5 motorcycle policemen, 2 Transport Co. linemen, and 3 trained supervisors.

Traffic Mgr. Matt Flach says

"Shea Matson Co. now owns over 40 facrosse low beds, and they haven't let us down yet." Why not investigate Lacrosse dependability and economy for your hauling operations.



AT 11:22 P.M. the two trailers with drum slung between them — began inching their way out of A. O. Smith Corp. shops in Milwaukee's north side.



BY 7:20 A.M. next morning, the huge \$50,000 cargo was in safe custody of Jones Island dock cranes, ready for loading aboard ship.

Birtile 1

Leaders in low boys for over 22 years

430 Gould Street LaCrosse, Wisconsin TRAILER CORPORATION

RUSSIAN VERSION ...

Continued

of 2,000 cu yd per hr and is capable of digging to a depth of 43 ft. It weighs 76 tons and moves on balloon tires towed by three S-80 track-type tractors. These tractors, although Russian-built, look suspiciously like the old Caterpillar D-7 models.

This scraper-excavator is made up of two sections. The lower one has a 10-ft wide scraper which brings the dirt up on to a 40-ft inclined conveyor mounted on a four-wheel chassis. The dirt falls off this conveyor on to a second conveyor, 150 ft in length. This latter conveyor is mounted at a right angle and is of the elevated type.

Giant Walker

Two tractors are used to pull the lower rig and one used to pull the elevated conveyor at the discharge point. A 130-hp diesel is used to furnish power for the conveyors. It takes a six-man crew to operate this outfit.

Shades of Rube Goldberg are incorporated into the Russian-built ESH 14/65 walking dragline. This outfit weighs 1,100 tons and uses an 18-cu yd bucket on a 230-ft boom. The Russians claim it can excavate 1,000 cu yd per hr. It is mounted on a 45-ft dia base plate. A novel feature of this rig is a pair of walking feet. Each foot is 53x8 ft and is hydraulically operated. The feet are thrust out in back 6 ft and lowered and the unit "steps off" each move of 20-30 yd.

Portable Factories

It is operated with 46 electric motors which give a combined output of 7,000 kw.

The Russians plan to increase the production of this unit by designing one with a 29-cu yd bucket.

Another machine reported to be in use by the Russians is a floating suction dredge. This one can extract 1,300 cu yd per hr and is capable of pumping the discharge through 2½ mi of pipe.

Still another project the Russians seem to be boastful about is portable concrete factories. They claim they have an automatic process which unloads the cement, sand and rubble and produces the finished product at the rate of 220 cu yd per hr.

The press releases also tell of two-axle, 25-ton trucks with 21cu yd dump bodies.



"YOU CAN'T BEAT GM DIESEL POWER FOR THIS KIND OF WORK"

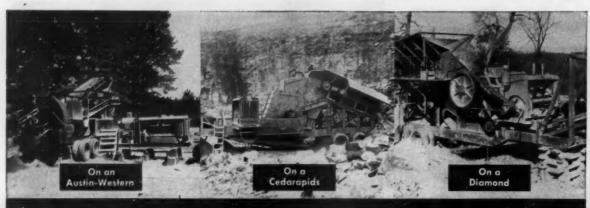
That's what Mr. Pellew says of his 18 General Motors Diesel-powered units on this highway construction job. He adds, "We get more work from our rigs with less downtime because GM's 2-cycle design reduces engine vibration."

GM 2-cycle Diesels accelerate faster under load because 2-cycle design gives power on every piston downstroke, not on every other downstroke as in 4-cycle engines. Starting at the push of a button, GM Diesels use efficient "unit" fuel injectors that eliminate troublesome high-pressure fuel lines. And with the scavenging blower delivering a surplus of fresh air to the cylinders, there's more complete mixing of fuel and air—better combustion—more work from the same amount of fuel.

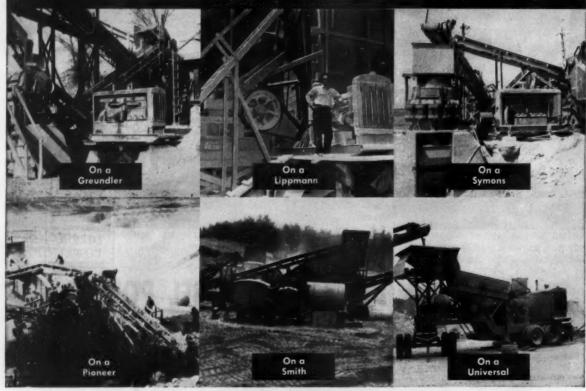
Ask any GM Diesel owner. He will tell you that GM Diesels boost production and cut costs. For the full story of the savings you can make, call in your nearest GM Diesel distributor.

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines... 16 to 300 H.P. Multiple Units... Up to 840 H.P.



Your crusher will perform better with MURPHY DIESEL POWER



MURPHY DIESEL COMPANY

5339 W. Burnham St.

Milwaukee 14, Wisconsin

260

Engines and power units 90 to 240 H.P.; generator sets 60 to 154 K.W.



Heavy duty power for construction

Murphy Diesel Engines and power units are available in sizes from 90 to 240 H.P. Engine speeds are 1200 and 1400 rpm. Also available are dual-fuel engines and altitude engines which will main-

tain sea level ratings up to 9000 ft.
"Packaged" generating units are available with capacities ranging from 60 to
154 K.W. A.C. or D.C. voltages to suit
your requirements.

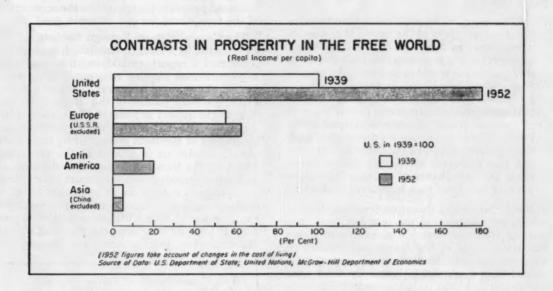
Contrasts in Prosperity Endanger the Free World

The chart in the middle of this page summarizes a situation of profound importance to every American. It shows that:

- On the average, Americans are vastly better off economically than most other people in the free world, and
- In recent years the gap in income between the average American and the average European, Latin American or Asian has greatly widened.

A Mounting Contrast

Even greater is the contrast between the real incomes of Asians and Americans. Today most Asians are no better off economically than they were back in 1939. On the other hand, the real income of the average American has almost doubled. As a result, the real income of the average Asian—always small by our standards—is now only a tiny fraction of that of Americans.



The chart shows that, at the outbreak of World War II, the real income (that is, actual purchasing power of income) of the average American was substantially higher than the average European's and much higher than the average Latin American's or Asian's. Since then, the European and Latin American have become better off. But the improvement in the economic lot of the average American has been so great that the others have been left far, far behind.

It must be remembered that the figures used to construct the chart are of varying quality. The fact is that few of the poorer countries have reliable statistics. However, it is generally agreed among competent observers, that the figures here presented offer a correct impression of the wide disparity in the average of real incomes between various parts of the free world. The figures, of course, have nothing decisive to say about spiritual and cultural values. In these, coun-

tries with relatively little material prosperity may be rich.

It is possible to draw a variety of morals from the story of lagging growth of income in other parts of the world. For one thing, it reflects the dynamic force of private enterprise. Private enterprise is characteristic of our economy far more than it is of most of the other free economies. The chart also reflects the fact that we are bountifully blessed with the natural resources essential to a high level of real income. Moreover, we did not suffer from the devastation and waste of two world wars as did many of the other free nations.

Narrowing the Gap

But perhaps the most important message which the chart conveys is one of warning. It warns that something must be done to narrow the gap in prosperity between America and other parts of the free world, if that world is to be united successfully in the struggle against totalitarian Communism. Writing in the Harvard Business Review, Kenneth E. Boulding recently put it this way:

"The crux of the problem is how to raise the three-quarters of the world that live on a low level to the high level of the other quarter, for it is precisely this wide disparity that makes our world so unstable. American-Russian relations, for instance [are]... complicated almost unbearably by the fact that each power is competing for the support of the vast fringe of underdeveloped countries... These countries are dissatisfied with their present state and are hovering between the two cultures, wondering which offers them the best chance of shifting from their present low-level to a high-level economy."

Very real danger threatens from any feeling which may develop in the less fortunate free nations that our enviable economic progress has been made at their expense. Instead of viewing the American economic system as a model that might be followed by their own countries, they may be led to see in it a menace to their well-being. If Communist propaganda can persuade these people that their alliance with the free world will only result in their dropping farther and farther behind an increasingly prosperous United States, they will be driven to the side of totalitarianism.

Test of Effective Leadership

How can these free nations on the lower half of the income ladder be helped to alleviate the conditions that keep them there? Surely this question poses a whole series of complicated problems. Yet, if we do not exercise some effective leadership toward their solution, we can be sure that Russia will take advantage of the situation. In these circumstances, it is essential to both the stability and security of the free world that we help our less prosperous neighbors make satisfactory headway.

This does not mean that the United States should sacrifice its own economic progress in favor of some sort of global leveling scheme. On the contrary, a continually expanding and stronger economy is essential if we are to provide any real aid to our friends. Also, it goes without saying that our friends must be disposed to do all they can to improve their own economic position, if our cooperation to that end is to be effective.

Great Skill Required

Our part in a program to achieve this goal calls for a high degree of skill and statecraft. It involves international trade policy, which, in itself, presents a perplexing range of problems. It involves also programs of foreign technical and economic assistance. And expanded foreign investment must play a key role in a balanced program to strengthen the economies of the free world for our common good.

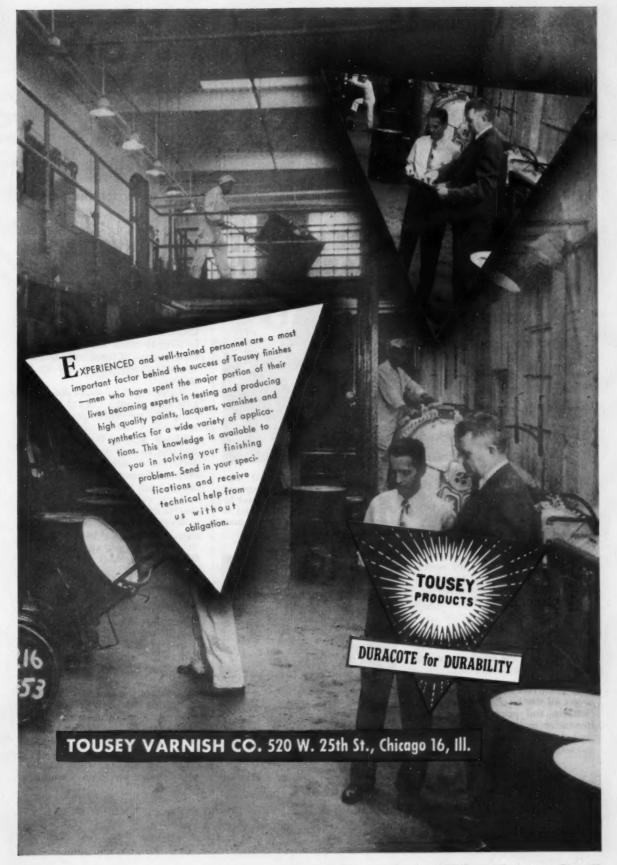
The Commission on Foreign Economic Policy, headed by Clarence Randall, has recently submitted a report, embodying the results of a monumental inquiry into our foreign economic relations and measures to improve them. From the very nature of the subject, discussion of the report is bound to be attended by much controversy and conflict. However, an awareness of the facts presented by this chart should inspire us to accord to the problems posed by the Randall Commission the careful and sober consideration they must have if any real progress is to be made in raising the general standards of human well-being throughout the free world. Our willingness and ability to do this have now become the real test of our statesmanship, both at home and abroad.

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Donald CMCGraw

McGraw-Hill Publishing Company, Inc.





It still looks like the old D8 but ...



... many improvements mark the new D8

(Advertisement)

HERE'S HOW TO RESTORE CONCRETE FASTER, BETTER, at LOWER COST!

BONDACTOR Concrete Gunning Equipment Pays Its Way All the Way!



Any way you figure it, a BONDACTOR is a wise investment! Why? Because this versatile equipment starts paying you back on the first job . . . and never stops! The secret? Versatility! Bondactor equipment can be used in so many ways to maintain, restore concrete, for waterproofing, stuccoing, cleaning of building interiors and exteriors, insulation, fire-proofing, wet and dry sandblasting.

Any of these jobs can be done more economically for you because Bondactor gets the job done for you faster, better, at lower cost!

Why don't you write, wire or phone to get all the facts, complete specifications and prices on the three Bondactor models. Please state in-tended uses and materials to be gunned. Do it now!

PAID FOR ITSELF IN 90 DAYS! This portable rig, utilizing Bondactor and Mix-Elevator Equipment, and used by the Kentucky Highway Department to maintain concrete bridges in the state, paid for itself in 90 days.



"THE ONLY WAY" to repair spalling on this Morgantown, North Carolina dam, according to Duke Power Company engineers, was with concrete shot from Bondactor equipment,

Air Placement EQUIPMENT COMPANY

1008 West 24th Street

Kansas City 8, Missouri

Anniversary Model

CATERPILLAR TRACTOR CO. is helping to mark the 50th year of manufacture of track-type tractors by announcing a new 150-hp D8

It's powered by a Cat diesel engine with an output of 185 hp operating at a governed speed of 1,200

Listed among the new engine features contributing to improved performance are lower operating cost and longer life and a new cylinder head with improved valve springs, valve rotators, valve seat inserts of hardened metal for inlet and exhaust valves, new camshaft, stainless steel heat plug, oil pump mounted in oil pan and driven from front of crankshaft and larger air cleaner.

The oil clutch, introduced in 1953, is another improvement incorporated in the new D8.

In first gear the D8 will develop a drawbar pull of 29,200 lb. and with optional heavy-duty transmission a drawbar pull of 39,800 lb.

Speeds of the latest D8 have been increased. Forward travel speeds with standard transmission are: first, 1.9 mi per hr; second 2.7 mph; third 3.5 mph; fourth 4.5 mph; fifth 5.8 mph.

Reverse speeds with standard transmission are from 1.9 mph to

Length over all is 16 ft 1/8 in. and height 7 ft 2 in. Width is 8 ft 7¾ in.

Shipping weight of the new model is 38,155 lb.

handle the BIG LIFTS in COST CUTTING TIME!

Scores of lifting jobs, light or heavy, can be handled smoothly and efficiently with a Bucyrus-Erie 22-B Transit Crane.

"Full-feel" control lets operator place loads accurately with minimum jockeying. Power controlled lowering for main hoist line plus fully independent power controlled boom lowering speeds work still more, permitting delicate positioning of loads. A friction swing brake (in addition to the regular swing lock) enables operator to spot and hold boom point over a desired position. Special 16-part boom suspension provides slower boom hoisting or lowering for even greater precision in setting steel, etc.

Open-throated boom construction permits rigging 2, 3, or 4 parts of line without removing sheave guards. Even with high boom angles, lines can pass freely behind sheaves. Jib extensions in 10-, 20- or 30-foot lengths, available for special high lift crane service, can be added without removing sheaves, guards, or suspension ropes from upper end of boom.

With special boom folding mechanism, booms over 60 feet can be carried folded on job-to-job moves.



See your Bucyrus-Erie excavator distributor for complete information.



South Milwaukee Wisconsin



THE FLEX-PLANE HYDRAULIC finishing machine had 15 different on-the-job tests to prove the new unit. Tests ranged from city street

to state highway work and from half-width to full 24-ft width. The machine is completely portable.



THE FLEX-PLANE is working full width here on a super-elevated curve on a state highway job in Michigan. The manufacturer claims

that the machine with its complete hydraulic action improves the quality of the finished concrete and is faster.

Finishing Machine Completely Hydraulic

CLAIMED TO BE the first concrete road building machine to incorporate the benefits of complete hydraulic action, the Flex-Plane, has two outstanding features—it improves the quality of finished concrete and extends the speed at which concrete pavements can be finished.

It's completely portable, it's faster on width adjustments and it has simplicity and ease of operation, according to the manufacturer.

Because of the new design, the manufacturer, The (Continued on page 166)



Stop Effects of SHOCK I

Sinclair HEAVY DUTY BEARING GREASE is a greatly improved lubricant for bearings in power shovels, drag lines, tipples, conveyors and similar heavy duty equipment. It cuts wear by resisting shock, heavy loads, heat and pounding. It stays put — successfully lubricates large, loose-fitting bearings.

Sinclair GEAR PROTECTIVE COMPOUND provides a new high standard in exposed gear lubrication. Extreme pressure additives carry heavier loads — protect against wear. Moreover, this compound stays put, resists throw-off, squeeze-out or peeling.

Sinclair JET LUBRICANT #20 can prolong the working life of your turntables, rollers and roller rails. It is an all-season lubricant that resists squeeze-out — protects costly parts against shock and heavy, constant loads.

A Sinclair Lubrication Engineer can give you expert counsel on how you can get the most out of these cost cutting, time saving lubricants. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, New York.

SINCLAIR LUBRICANTS



HERE'S THE MACHINE in a transport position. The screeds have been hydraulically raised above the machine and the pneumatic

wheels lowered. The entire make-ready for transportation can be accomplished by one man in less than 15 min.



20 Water Main Taps Per Day WITH ONE SHERMAN POWER DIGGER!

Because of the speed and ease with which trenches and holes can be dug by a Sherman Power Digger, Utility Installations Co. of Detroit has found a profitable sub-contracting business—digging to tap water mains and trenching for service lines into homes in new housing projects. Up to 20 bell holes for water main taps are dug by a single Sherman Power Digger in one working day. This performance is due to the easy handling of the all-hydraulic Sherman Power Digger—its flexibility, compactness and maneuverability. Combine these with Sherman's exclusive design features, simple maintenance and amazingly low initial cost . . . and you'll find that a Sherman Power Digger will fit into your operation profitably too! Write for free literature U50.

Designed, Engineered and Manufactured Jointly by SHERMAN PRODUCTS, Inc. Reyal Oak, Michigan WAIN-ROY CORPORATION Hubbardston, Mass.

Patent No. 2,303,825 Other patents pending



Flexible Road Joint Machine Co., Warren, Ohio, felt the machine needed thorough, practical, on-the-job testing. Hence 15 different jobs ranging from city street to state highway work and from half-width to full 24-ft width work were used to prove the hydraulic machine.

Tests included conditions where the machine worked entirely on its own on a ready-mixed pour, and on other high-speed streamlined operations, employing two dual-drum pavers, two spreaders, two finishing machines, and mechanical bullfloats. Super-elevated curves, inclines and declines, transitions in width from 0 to 12 ft, and transitions in crown from flat to 3 in., were all successfully handled by the test machines.

Proof of the success of the testing program is that contractors who cooperated in the program purchased test machines assigned to them.

Wheels Outside

The machines are available in two standard sizes—one for half-width construction, adjustable from 10 to 15 ft, the other for full-width construction, adjustable from 20 to 25 ft. The frames are telescopic in increments of 3 in. Track wheels are mounted on the outside of the frames, eliminating frame overhang.

Power comes from a 32-hp Wisconsin VG-4 gasoline engine equipped with electric starter. The two 12-in. wide screeds, one in front and one in rear, both independently operated, are mounted outside the frame and are hydraulically reciprocated. Because of this piston-activated hydraulic action, objectionable drag and inefficiency usually associated with mechanical machines, are eliminated which in-

(Continued on page 168)

IN 1939 OR 1954...

THE HEIL CO. selects USS MAN-TEN steel to give extra strength and durability to its earth-moving equipment

IN 1939

TO INSURE PROFITABLE operation in any kind of soil, regardless of weather conditions, The Heil Co., Milwaukee, Wis., fifteen years ago, built their famous DIG-N-CARRY Scrapers with USS Man-Ten steel in the highly stressed parts of this scraper with very good results . . . even applying Man-Ten on parts subjected to abrasion. Approximately 50% of the fabricated steel parts, which include bowl assembly and rear axle assembly, are of Man-Ten steel. Built principally of box sections, our scraper requires a great deal of welding in which strength of the weld is important. We have had good results in this respect."

IN 1954

THE HEIL CO. introduced this new angle block for Oliver tractors shown in the photograph. To give the A-frame and blade great strength—and at the same time hold weight down—was the problem which faced the engineers in the construction of this new Trailbuilder. USS Man-Ten steel was selected for these vital parts. Used in the same weight as regular carbon steel. USS Man-Ten steel materially increases strength, toughness and durability.



HEIL and other companies specializing in the construction of all kinds of heavy-duty earth-moving equipment have a long record of use of USS MAN-TEN steel – and other USS HIGH STRENGTH STEELS. This is convincing proof of the ability of these steels to give equipment the stamina

to stay on the job.

USS Man-Ten, USS Cor-Ten
and USS Tri-Ten steels resist wear, impact and abrasion. They have a yield point 50% higher than ordinary steel. And they resist atmospheric corrosion, too.

The big fact, however, is that you can give your equipment these properties without increasing weight. Or, you can use USS HIGH STRENGTH STEELS in lighter sections and actually reduce weight without reducing the stamina and ruggedness you had

We'll tell you more if you'll write to our nearest District Sales Office.

UNITED STATES STEEL CORPORATION, PITTSBURGH AMERICAN STEEL & WIRE DIVISION, CLEVELAND COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO NATIONAL TUBE DIVISION, PITTSBURGH TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. UNITED STATES STEEL SUPPLY DIVISION. WAREHOUSE DISTRIBUTORS UNITED STATES STEEL EXPORT COMPANY, NEW YORK

HIGH STRENGTH





HYDRAULIC FINISHER ...

Continued from page 166

sures the screed being in perfect contact with the concrete throughout its complete cycle and results in a better finish. Working speeds of the screed range from 9 to 100 strokes per min. Screed strokes are adjustable up to 9 in.

Screed speeds, coupled with forward and reverse travel speeds, give an infinite number of combinations available to the operator simply by dialing the speed desired. The screeds are equipped with quick crown change devices. Wearing plates are made of high alloy steel with combination wings. The screeds can be raised hydraulically for road travel.

The Flex-Plane is said to be 2½ times faster in travel speeds than mechanical machines. It can work into the concrete as fast as 24 fpm and back down the forms at 220 fpm. Such speeds give the contractor the opportunity to put down more sq yd of slab and effect greater economies.

Finger-Tip Controls

Field tests proved two points: The Flex-Plane hydraulic machine, while replacing two or more machines, can maintain previous production; or it can boost production rates if all other factors remain the same.

Finger-tip controls are centrally located and panel-mounted for easy operation. Regulated hydraulically are: Travel speed, forward and reverse travel, front screed drive, transportation wheel raising and lowering, trailer tongue pedestal raising and lowering, front screed raising and lowering, rear screed raising and lowering controls

The Flex-Plane incorporates optional built-in portability. It consists of retractable pneumatic tires, built-in towing tongue, raising and lowering hydraulic jack at the towing end of the machine and raising and nesting of the screeds above the machine. Raising of the screeds hydraulically eliminates the removal of the screeds at any time from the machine. With the screeds nested above the machine in the transport position, the over-all width of the machine is less than the 8-ft maximum requirement for state highway clearance.

The smaller machine weighs 9,-500 lb, the larger one, 11,500 lb.

Maintenance costs on the machine are said to be considerably lower than on mechanical machines

6020 Breakwater Ave., Cleveland 2, Ohio

Six reels mounted on back of truck, plus one water hose on each side allow the Portable Service Station to service two pieces of equipment at once. Here a glant bulldazer and heavy "Cat" get in-the-field service — no lost time — complete lubrication protection!

Alemite units mount directly on flat truck bed. Lubricant is pumped direct from refinery drum, is delivered to bearings completely free of dust, grit or contamination. 40' high-pressure hoses reach out to serve many fittings on each stop.



here's how Alemite
Portable Service Stations help



SMASH RECORDS ON THE BILLION DOLLAR NEW YORK STATE THRUWAY!

Alemite In-the-Field Lubrication helps Arcole Midwest Corporation meet tight time schedules!

The largest road-building project ever undertaken by man! That's the 427 mile, four lane, New York State Thruway. 80,000,000 cubic yards of earth to move -1,125,000 square yards of concrete to pour — countless underpasses — bridges, including two new ones across the Hudson. Cost, about a billion dollars! And the vast bulk of this mammoth undertaking will be completed within a year and a half, an amazing new record for this type of construction!

To meet this record-breaking pace on their part of this giant project, Arcole Midwest Corporation of Skokie, Ill., assembled 60 odd pieces of heavy earthmoving and grading equipment on their stretch of road outside Schenectady. And to keep that equipment in the top condition it has to maintain, they chose Alemite Portable Service Stations.

Heavy-duty pumps, hose reels, etc., are custom-mounted on a 2½ ton flat bed truck. Equipment is serviced right in the field for this triple saving . . . 1. Save Time! By bringing complete power lubrication to all equipment right on the job—safely, efficiently! 2. Save Money! By cutting expensive lubrication downtime—increasing output of both men and machines. 3. Save Equipment! By greatly reducing the possibility of costly, time-consuming, bearing failure.

Alemite portable service stations Offer these 4 Services



Fast, easy lubrication of track rolls



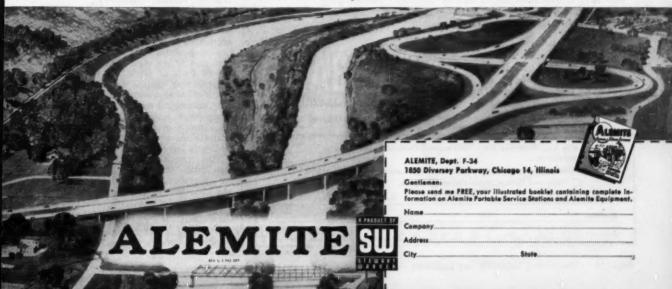
No all wasted — use exact amount of lube



Quick filling of geo housings, transmis-



Air line equipment for tire inflating — air jet cleaning.





MALSBARY 250 steam cleaner cleans heavy grease, caked clay, dirt from Link-Belt shovel in 4 hours.

CLEANING EQUIPMENT?

Switch to
Malsbary
HPC* Cleaners
Get results like these:

Equipment Cleaned

D7 and D8 Tractors TD 9 Dozershovel Meter Grader 1½-yd. Shovel Clamshell buckets Payloader

MALSBARY HPC* Cleaning Time

1½-2 hours 2 hours 3½ hours 3-4 hours 30 minutes 45 minutes

 $^{\circ}\text{HPC}$ (potented) = high pressure (to 400 p.s.i.) + combination of either hot solution to 325° F., cold water, or steam.

HOW MALSBARY CLEANING PAYS OFF

- · Checks wear by removing abrasive, corrosive dirt, grease, road oils.
- Reduces downtime by revealing worn or faulty parts in time to replace or repair before expensive breakdowns occur.
- Saves up to 40% of mechanics' time by eliminating grease wiping.
- Cuts painting costs.
- · Increases efficiency of equipment and operators.

See for Yourself

Ask us to demonstrate on your job, against your present cleaning methods, how MALSBARY HPC Cleaners save time and do a better cleaning job. Fill in and mail coupon NOW.



Room C3, 845 92nd Ave. . Oakland 3, Calif.

Malsbary Mfg. Co., Room C3, 845 I AM INTERESTED IN —	5 - 92nd Avenue, Oakland 3, California	4
☐ On-the-job demonstration. ☐ "Why and How of Str	MALSBARY catalog-in-brief No. 150-R cam Cleaning" reprint.	
Name	Position	
Business		

FROM A READER ...

TO THE EDITOR:

Your editorial, appearing in the August and September, 1953, issues of CONSTRUCTION METHODS AND EQUIP-MENT, entitled "One United Con-struction Union," deserves a hearty commendation. After experience involving the extremes of labor market situations and restrictions, I had come to the same conclusion. On the one extreme I encountered the highly industrialized markets where the restrictions and jurisdictional lines were fantastically sharp and only led to inefficiency, undue tension and to lack of safety among almost all the people connected with the work. And on the other hand, I found rural labor markets . . . where everyone is ready and willing to pitch in and get the job done by doing, within reason, what the foreman asks. In this latter extreme there was a feeling in the workers that they were working for their employer not just for a pay check. Consequently, practically everything they could do with a certain proficiency they would try to do efficiently and economically. If a man was asked to work in a trade that was somewhat new to him, he would pitch in to learn from the more experienced men. Soon he would gain an acceptable degree of proficiency and then be able to work at least as efficiently as the urban tradesmen with many years of experience who were hobbled by union restrictions . Now that I teach Construction Engineering to college students, I have become more aware of the importance of efficiency in construction operations. Until we find ways to improve the efficiency of construction labor, or eliminate some of the need for it, the buyers of construction will not be getting their money's worth, regardless of its inflated value.

Would Promote Efficiency

Your suggestion . . . would certainly help to promote efficiency and economy . . . Of course, the present unions contend that installation of just one union would put a lot of laborers out of work . . . (but) one construction union would permit more efficiency and therefore economy, thereby helping buyers to get more construction work under way . . . mean more construction jobs undertaken which might mean more positions for construction workers.

The transition to one construction union would not be easy. But . . . members of unions would find the transition to one union less detrimental, in fact, actually beneficial when points for friction and tension were removed.—David A. Day, Asst. Prof., Dept. Civil Engineering, University of Illinois, Urbana.



Schutt Construction Co. to clear 17,850 acres in eleven months

Schutt Construction Co. Inc. is a company of land clearing specialists. From coast to coast, Schutt's Cat Diesel Tractors are reclaiming wasteland—and the company is beating schedules with Fleco land clearing equipment.

At Downsville, N. Y., the Schutt Co. has six Fleco Rake-equipped tractors clearing and grubbing 17,850 acres of wooded land to provide more reservoir area for the Downsville Dam.

The Fleco Rakes work in teams to pile huge stacks of cleared vegetation for burning. The teeth of the rakes comb dirt out of the debris, leaving piles clean and easy to burn. Speedy stacking and easy burning will enable Schutt Construction Co. to finish the 13-month contract two months early. This work requires rugged durability and Fleco Rakes have it.

Your land clearing contracts will pay bigger dividends with specialized Fleco

land clearing tools on the job. Fleco designs and builds a complete line of land clearing tools that match specific job needs. The tools are easily interchanged and give your Cat equipment greater versatility, greater profit possibilities.

Ask your nearby Fleco-Caterpillar Dealer for facts on the tool that matches your land clearing needs. Call on himtoday—or write direct.

FLECO CORPORATION, JACKSONVILLE, FLORIDA



YOUR FLECO DEALER IS YOUR CATERPILLAR DEALER



We grind truck axles to

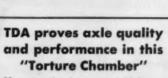
in the new Timken-Detroit indoor proving ground...and only

We jounce, twist and grind them. We abuse, torture and ruin them. We duplicate any on-the-job hauling situation... then add several special brutal tests of our own.

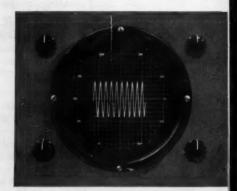
And for good reasons! We can assure you in advance that a Timken-Detroit axle can take a harder beating on the job it was built for than any other axle made!

We capsuled a multi-thousand acre proving ground into one room. Here our engineers put 50 years of experience in building axles for trucks, buses and trailers to work. Here the axles and gearing are subjected—indoors—to any outdoor hauling condition . . . and scientifically analyzed.

It's research to the "umpteenth" degree. But you enjoy: longer truck life; less maintenance, repairs and downtime; lower operating costs. That's why the smart money of truck builders and owners rides on Timken-Detroit axles and gearing.



Here we simulate actual highway conditions...test quality and performance of axles under any hauling situation, such as duplicating the kinetic energy of 80,000 lbs., G.C.W., at 60 m.p.h. All tests are repeated hour after hour with an automatic cycling control.



Whatever you haul...simulated service conditions show up electronically on a screen like this. For instance—a heavily loaded truck on a bumpy, twisting road—then on a level express highway or long grade. What happens to the axle and gearing is measured, charted with absolute scientific accuracy.









You're hauling overburden . . . you want axles that can get you up, out and on the road—fast . . . with few shifts, low engine r.p.m. and skimpy gas consumption. You want to stay on the job . . . with little expense for maintenance or repairs plus long axle life. You want Timken-Detroit "Torture-Tested" axles with Hypoid gearing!

You're hauling wet concrete . . . you can't afford axles 'that "conk out" enroute. You want axles you know for sure will take off and get the mix to the job—on time—ready to pour. You don't want costly maintenance and repairs or shoptime. You want rugged Timken-Detroit "Torture-Tested" axles with Hypoid gearing. They save you money.

You're hauling cement . . . you want axles that can get the load up and out of anywhere . . . then speed it to the job and get back quick. You don't want to beat your engine to death . . . or have profit-eating maintenance, repairs or downtime. You want axles that can stand up—Timken-Detroit "Torture-Tested" axles with Hypoid gearing.

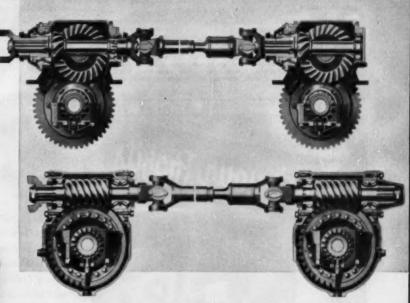
pieces

Timken has it!



"TORTURE-TESTED" to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS

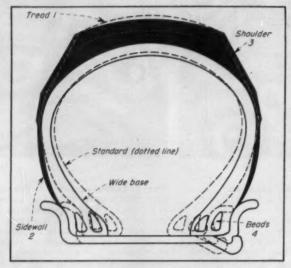


For "Million Mile" performance . . . your choice of two types of Timken-Detroit Tandem Drive Rear Axle Units

- 1. Top-mounted hypoid-helical double-reduction final drive. First reduction is hypoid gear and pinion—second is helical spur-gearing. Hypoid gearing, developed for heavy-duty trucks by Timken-Detroit, assures outstanding performance and low maintenance costs for operators everywhere. Large pinions, greater tooth contact give TDA hypoid-helical gearing the ability to stand the "gaff" of extreme shock loads and hard, gruelling hauling service.
- 2. Famous patented FJ worm gearing, pioneered by Timken-Detroit. "Through Drive" type . . . direct transmittal of engine torque through forward driving axle to rear driving axle. Permanently silent . . . simple, sturdy . . . stands extreme shockloads without damage. Large diameter worm and worm wheel . . . increased capacity roller bearings . . . easy lubrication . . . light weight make FJ highly desirable for high speed service on any kind of grades.

Plants at: Detroit, Michigan

Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania



(1) TREAD... The standard, narrow rim forces the tread into a semi-round contour, which increases wear in the center of the tread. The wide base rim flattens the tread, distributes the wear over the entire surface.

- (2) SIDEWALL... The narrow rim causes abnormal bulge in the sidewalls—which strains the cord structure, increases flexing, generates more heat. With wide base rims, the sidewall takes its natural shape—reducing strain, flexing and heat.
- (3) SHOULDER...With standard, narrow rims, flexing localizes in the shoulder and creates excessive heat that may lead to premature failure. With wide base rims the stance of the tire is straighter, more natural—flexing is distributed through the tire in shoulders and sidewalls.
- (4) BEADS...On narrow rims, beads ride high, throw wheel and tire assembly off balance, cause bulge above rim flange, may create excessive flexing, breakdown in cord structure, foilure. With wide base rims, bead rides in

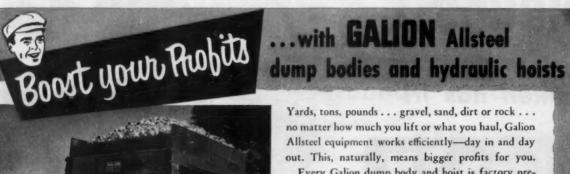
Want 30% More Mileage From Truck Tires?

IF YOU'RE A CONTRACTOR owning a fleet of trucks you should be interested in a method to increase tire mileage up to 30%, reduce the possibility of blowouts and premature failure, give greater stability, offer less rolling deflection, give more road contact, less sidesway, and increase the ability of the tire to take more recaps. This can now be done, according to The Goodyear Tire & Rubber Co., Inc., Akron, Ohio, by switching to wide base rims.

It's not enough to get the right tires for the job, keep them properly inflated, and properly loaded and on old type standard rims. The answer today is to change over to the new wide base rims. The changeover shouldn't be too costly when figured that saving just one set of tires often will pay for it. A further reduction can be realized by using the replaced rims on smaller sized trucks.

The recommendations make good sense. The wide base rims allow greater space between tire beads-70% of the tire cross-section width—while old standard rims have only a 60% ratio. This greater space reduces sidewall bulge and helps distribute flexing

(Continued on page 176)



Galion's Model 12 contractors bodies are familiar sights on big construction projects . . . where schedules are

dependent upon equipment reliability.

Heavy-duty Model 880 hydraulic hoist easily lifts 10 1/2 to 15 1/2-ton loads.

Every Galion dump body and hoist is factory pre-

tested under actual operating conditions. This assures you of minimum maintenance and operating costs.

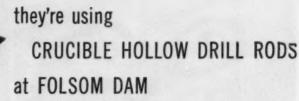
Galion manufactures a complete line of hydraulic hoists and dump bodies of 3 to 27-ton capacities to

> meet your every need. However, if you need extra heavy-duty or specialized units, Galion will be glad to design and build them for you.



ALLSTEEL BODY COMPANY . GALION, OHIO

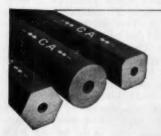




The Folsom Dam project is a big construction job. When completed it will be 340 feet high, 1400 feet long—with wing embankments extending for more than two miles. The new dam will provide a source for irrigation and power, and serve to control flood conditions in the American River Basin near Sacramento, California.

Part of the construction work involves the excavation of more than 9 million cubic yards of earth and rock. Here's where Crucible Hollow Drill Rods are playing a mighty important role. They can't be beat when it comes to hard rock drilling operations.

Crucible Hollow Drill Rods are made to tool steel standards by the world's largest producer of tool and other special purpose steels. This *extra* quality assures you of minimum rod breakage . . . and fewer valuable bit losses. For dependability in rock drilling, buy Crucible Hollow Drill Rods.



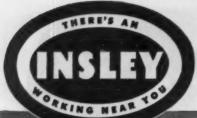
CRUCIBLE

first name in special purpose steels

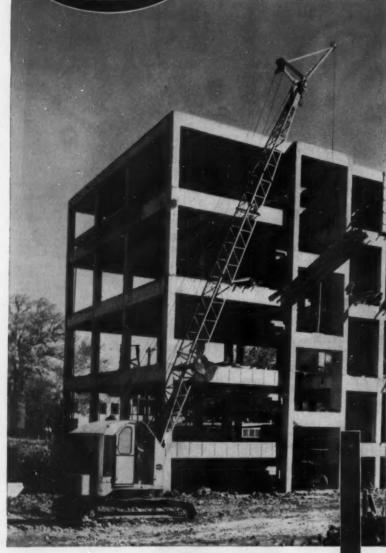
54 years of Fine steelmaking

HOLLOW DRILL ROD

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA. REX HIGH SPEED TOOL REZISTAL STAINLESS ALLOY MACHINERY SPECIAL PURPOSE STEELS



ON A CONSTRUCTION PROJECT



The Insley Line includes excavators and cranes, 5 to 30 ton capacity—rubber or crawler mounted — gasoline, diesel or electric powered. There's an Insley working near you on a construction project.

INSLEY MANUFACTURING CORP. AINDIANAPOLIS

wholly owned subsidiary
THE MAXI CORPORATION, LOS ANGELES

MORE MILEAGE ..

Continued from page 174

action through the sidewalls instead of concentrating it just about the beads and near the shoulders.

This better distribution of flexing results in less heat being generated, minimizes cord fatigue and lessens the possibility of blowouts. It also decreases wear and tear on the carcass.

The greater stability of wide base rims becomes an important factor when temperamental loads such as fluids are being hauled. Taper under beads insures concentric mounting of the tire, resulting in a favorable effect on balance of front wheels on high-speed operations.

The accompanying chart shows the recommended wide-base rim schedule for various size truck tires.

Tire		
Size	Rim Width	% Ratio*
6.50	5.00	69%
7.00	5.50	71%
7.50	6.00	71%
8.25	6.50	71%
9.00	7.00	69%
10.00	7.50	69%
11.00	8.00	70%
12.00	8.00	69%
13.00	9.00	67%
14.00	10.75	71%

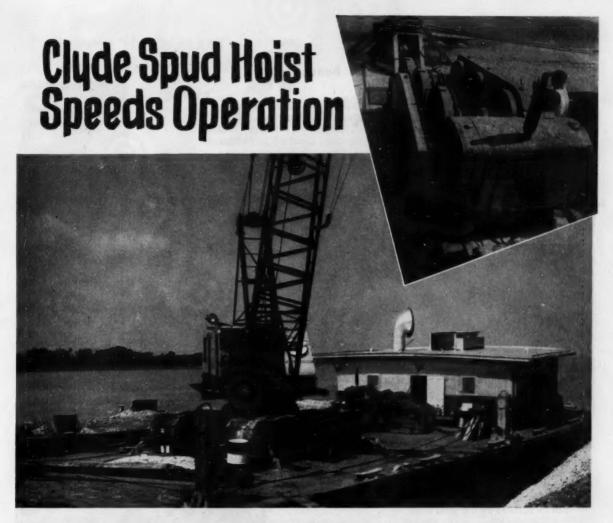
*Tire cross-section width

Tunneling Saves Time

TUNNELING by hand methods through a high ridge in a residential section of Wichita, Kan., for a sewer line recently was more economical than excavating a trench 30 to 33 ft deep and backfilling. The section constructed by tunneling is 1,600 ft long, part of a 4.8-mi project. Specifications called for the laying of 15-in. vitrified clay pipe.

The contractor, W. B. Carter Construction Co., Wichita, first dug 10x12-ft shafts about 34 ft deep and spaced at intervals of 100 to 200 ft. The shafts were solid-sheeted and braced with horizontal jacks. Then men with pneumatic clay spades cut the tunnel, 3½ ft wide by 5 ft high, from shaft to shaft, sheeting the top and sides with 3x12 planks as excavation progressed. Muck was brought to the vertical shafts by wheelbarrow and lifted to the surface with buckets.

After the pipe was laid inside the tunnel, it was encased and the whole tunnel sealed with concrete taken down the shafts.



for Jahncke Service, Inc., New Orleans

This Clyde Spud Hoist has what it takes to do a bang-up job for Jahncke Service, Inc. of New Orleans.

Extra powerful band friction clutches are easily engaged to lift the heavy spuds from their anchorage or to pull a loaded barge into place for unloading. Antifriction bearings result in "free-wheeling" drums that pay out cable easily and allow the spuds to drop quickly. Ratchets are shrouded and gears are well enclosed to prevent possibility of rope entanglement. Pawls positively lock in and out to eliminate any chance of accidental load dropping.

Drums are easily removed . . . intermediate shaft can be

removed without disturbing drums . . . friction bands can be replaced or adjusted without removing drums. Ball and roller bearings result in greater line pull with less power consumption.

Special consideration is also given to the hoist operator. A comfortable seat is provided with brake and clutch controls that operate so easily it's called "fatigue-free" operation.

Marine and Dredging Contractors find that Clyde Quality Plus Hoists offer many advantages for their particular type of service. Write today for further information.



First Aid Handies ---





Knuckle Bands

CONSTRUCTION PEOPLE probably suffer from more banged up knuckles, fingertips, elbows, toes and heels than those of any other industry. These parts have always been difficult to bandage and keep bandaged during a working day. Now, a manufacturer, E. D. Bullard Co., 275 Eighth St., San Francisco, Calif., recognizing this problem, has come up with a new type of elastic bandage that will help protect these tough-to-bandage spots.

Called the Elastic Knuckle-Bands the design gives freedom of movement without bunching behind the knuckle. They can be used to fit over thumbs and fingertips and will stick tight. The adhesive leaves no marks on the skin because of a non-irritating formula.

All-Weather First-Aid Kit

First-aid supplies of "pharmaceutically controlled quality" in a



handy case, are reported features of a kit produced by Mine Safety Appliances Co., Pittsburgh, Pa. It contains a special color-identification system for packaged materials, with a simplified instruction sheet on the inside cover for giving first aid. The case is treated to resist dust and grease, and the lid has a rubber gasket on the inside edge to provide a tight seal.

Why use a Big Compressor on air jobs meant for a SCHRAMM 60 c. F. M. ?

It costs money to haul a BIG air compressor to a job that can be handled by a smaller unit!

That's why Schramm offers smaller size air compressors — like the Model 60 illustrated — as well as large units — to save you money. Moreover, they embody all the fine features of workmanship and material found in our larger size units.

Popular uses of Schramm smaller compressors include trench digging, backfill tamping, paint spraying and roofing material, operating paving breakers, 20 and 40# rock drills, concrete vibrators, saws, etc.

Tools as well as Compressors are available at once. Compressor sizes range from 20-35-60-105-210-315 and 600 c.f.m. in various types of mountings.

Write today for Bulletin AED

SCHRAMM, INC.

The Compressor People . WEST CHESTER, PENNSYLVANIA

SCHRAMM

AIR COMPRESSORS

A SIZE AND MODEL FOR EVERY AIR NEED

















TODAY, as never before, you need big volume output and low-cost production to command the market for aggregate.

That's what you get with the Cedarapids Commander!

The Commander Plant shown above produced between 300 and 400 tons per hour of 1¼" material with 20% crushing, and the two draglines feeding it couldn't keep it up to full capacity!

Low maintenance and operating costs, the result of Cedarapids-Quality construction and field-experienced design, keep production costs at absolute minimum.

For today's stiff competition, the producer who turns out more tons per hour, at less cost per ton, is top man on the profit pile.

Ask your Cedarapids distributor to show you all the Commander advantages.

- specifications for smaller sizes of crushed aggregate.
- Large 48" x 10' Horizontal Vibrating Screen gives extra screening capacity to balance the greater roll crusher output.
- 30" wide conveyors throughout the plant easily handle the high capacity.
 The Commander is designed to eliminate any possibility of bottlenecks.
- You get this increased capacity with no increase in maintenance or operating costs! That's the Commander's profitbenefit to you.

WRITE TODAY FOR BULLETIN COM-1

It contains complete details of all the features that make the Commander "the plant of the year" for low-cost aggregate production.



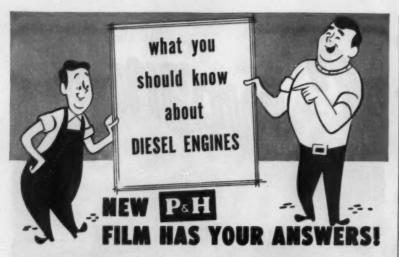


Cedar Rapids, Iowa, U.S.A.









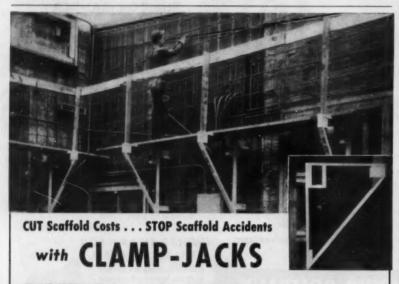
For a quick "Diesel education," you should see this new color slide film. You'll be wiser in the ways of modern diesel engines . . . how they operate . . . how they compare with gasoline engines . . . what they'll do

.. why they'll do it better ... how diesels save you money. For a personal showing of "What You Should Know About Diesel Engines," see your P&H Dealer. Or, write us for details.



HARNISCHFEGER





CLAMP-JACK scaffold costs are 1/3 to 1/4 that of standing type whether you build a small one-story war-house or a giant hydrogen bomb plant. Saves time and materials—eliminates need for standing, single pole or swinging scaffolding during all phases of concr. te construction work . . . erection of first and second form walls, placing reinforcing steel, (large photo) stripping forms and finishing walls. Each CLAMP-JACK bracket safely supports 1000 lbs., and cannot be accidentally dislodged because it bolts to walers (see inset) or rods 1.ft in concrete. Accepted by Safety Men and State Industrial Accident Commissions.

For detailed information, write to

CONTINENTAL SCAFFOLDING CO.

Box 2551, Sacramento 12, California

Dealer Inquiries Invited

SALES AND SERVICE -

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Koehring Co.: Gil Boers Equipment Co., Inc., 7625 S. Kedzie Ave., Chicago 29, Ill., has been appointed distributor for Koehring and two lines of subsidiary equipment, Parsons and Kwik-Mix, in northeastern Illinois and some counties of northwestern Indiana.

Gar Wood Industries, Inc.: Has appointed the following new distributors to handle its equipment in their areas—Sim Grady Machinery Co., Macon, Ga.; Highway Equipment & Supply Co., Harrisburg, Pa.; Arrowhead Equipment Co., Duluth, Minn.; W. L. Johnson, Midland, Tex.; and A. E. Hickman Co., Ltd., St. John's Newfoundland, Canada.

Concrete Sawing Equipment, Inc.: Has appointed the Techkote Co., Inc., of Inglewood, Calif., as distributor in the 11 western states, for the complete line of Concut concrete saws and the Foothill concrete sawing blades.

Hyster Co.: Appointment of Bode-Finn Co., with complete sales and service facilities in both Cincinnati and Dayton, Ohio, as dealers in Hyster industrial truck equipment in southwestern Ohio, northern Kentucky and southeastern Indiana has been announced.

Viber Co.: Announces appointment of W. J. Burke and Co., San Francisco, as northern California distributor for the complete Viber line of electric, gasoline, and pneumatic internal and external vibrators.

Wooldridge Mfg. Co.: Shriver Machinery Co., 1756 Grand Ave., Phoenix, Ariz., and Arrow Contractors Equipment Co., 4646 S. Kedzie Ave., Chicago, Ill., have been appointed exclusive dealers for Wooldridge earthmoving equipment in their areas.

On the Sales Front

Franki Foundation Co.: Appointed Major H. P. Burrell to the new post of special consultant on the use of Franki Displacement Caissons. He will headquarter in the company's New York office.

The Thew Shovel Co.: Robert W. Bairstow has been named south-

eastern district sales manager with headquarters in Atlanta, Ga. He succeeds D. W. Savage, who has become Federal district sales manager at Washington, D. C., with the responsibility for all company contacts with the federal government.

Osgood-General: Announces the appointment of William H. "Mae" Mc-Allister, as division sales manager for Texas, Oklahoma, Kansas, and western Missouri. He will make his headquarters at 3771 Almazan Dr., Dallas. Tex.

The Baker Mfg. Co.: Bert M. Constant has been appointed assistant sales manager replacing George D. Phares, who has been appointed Works Manager of Baker's new Beardstown, Ill. plant, now under construction. In addition to other duties, Mr. Constant will be in charge of Baker's advertising department.

Marlow Pumps: Announces the appointment of William E. Galland as district engineer for northern California with headquarters in the Sacramento area.

Baldwin-Lima-Hamilton Corp.: Announces the appointment of W. D. Ellis as manager of South American sales for Lima Shovels, cranes, draglines and pull-shovels. He will establish permanent residence in Sao Paulo, Brazil.

Watson-Stillman Co., Div. of H. K. Porter Co., Inc.: Announced the appointment of H. E. Elliott as sales manager. R. W. Schreck has been appointed assistant sales manager specializing in plastics machinery sales.

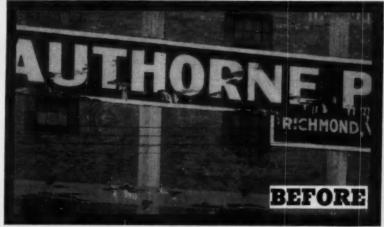
Homelite Corp.: R. C. "Bob" Glidden has been appointed manager of the northern California-Nevada sales district with headquarters at 1201 Shafter Ave., San Francisco. Ralph Evans was named manager of the San Francisco branch office; LaMar Cheney branch manager of the Fresno office, and Richard Dodelin, manager of the Sacramento branch in its new quarters at 2234 Auburn Blvd.

Marquette Cement Mfg. Co.: Announced the promotion of Robert C. Flood from salesman in the company's Central Division to the post of sales manager for its Iowa-Wisconsin division. He will make his headquarters in Marquette's general offices in Chicago.

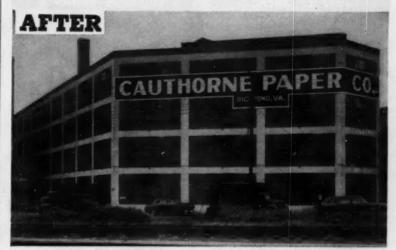
S. K. Wellman Co.: The appointment of Robert C. Brigleb as assistant sales manager, Jobber Replacement Sales, has been announced.

The Weatherhead Co.: Announces the appointment of Gene P. Robers as sales manager of the newly created Distributor Division. In this

THORITE patching mortar and two THOROSEAL applications rejuvenated this Virginia building

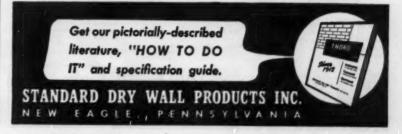


Constant weather exposure over the years caused the masonry of this building to disintegrate. If this unsightly condition had not been corrected it would have finally imperiled the structure of the building.



All concrete spandrel beams, columns, window heads and brick sills were patched and brought flush with surrounding surface by the use of The THORO System product, THORITE, a twenty-minute set, nonshrink, patching mortar. Two brush coats of THOROSEAL were then applied over entire reinforced concrete surfaces, to prevent further disintegration, also to beautify building.

CONTRACTOR: Southern Waterproofing and Concrete Company, Inc., 1704 Arlington Road, Richmond, Virginia.





and SAFELY with Safway <u>tubular</u> <u>steel</u> scaffolding—first in the field

SAFE SCAFFOLDING MEANS FAST, ECONOMICAL BUILDING. Safway scaffolding is safer in more ways than any other scaffolding you can mention. Thousands—yes, thousands—of construction firms, contractors, industrial firms are using millions of dollars worth of Safway scaffolding to speed their construction projects safely and efficiently.

For more information contact the Safway representative in your city, or write to Safway Steel Products, Inc.

Tower of Strength



Workmen safely reach into the sky 75 feet high. They're using Safway scaffolding to dismantle a heavy steel stack in Minneapolis. Safway carbon steel frames are solidly joined with using nuts to tubular steel cross braces for strength. All welds are made by master welders.

Corrosion Resistant



Weather and corrosion evon't hurt the Safway scaffolding used in this 185 foot ski slide in Los Angeles. It's corrosion and rust resistant. Special phosphate bath converts surface of Safway steel scaffolding to non-metallic oxide. Baked-on weather resistant paint gives extra protection.

Assembled to Fit Contours



Standard Safway equipment is easily assembled to fit the curved bow and sloping sides of this vessel at the U. S. Navy yards. Only a few basic types of interchangeable members are needed to assemble scaffolds of any required shape and height.

Time-Saving and Safe



No wonder builders like balanced Safway steel scaffolding! It's engineered for structural stamina-Easy-to-assemble units speed erection of scaffolding and make dismantling simple. Pictured here is the lowest cost steel scaffold on the market for loads up to 50 lb. per sq. ft. with heights up to 40 ft.

SAFWAY STEEL PRODUCTS

111 CORPORATIO
6243, West Stein St.
MILWAUKEE 13, WIS.

RENTED and SOLD
- by distributors
everywhere

SALES AND SERVICE ...

Continued

capacity he will direct selling activity for Weatherhead's automotive replacement parts and, in addition, all Weatherhead industrial products, Ermeto fittings, and heavyduty hose and reusable couplings sold through industrial distributors.

Quaker Rubber Corp., Div. of H. K. Porter Co., Inc.: The appointment of W. H. Van Buren as assistant general sales manager, eastern division branches, and A. M. Lowrey as assistant general sales manager, western division branches, has been announced.

Clark Equipment Co.: The appointment of Dudley A. Burnett and Marshall O. Nystrom as district managers of the Construction Machinery Division has been announced. Mr. Burnett will represent the division in the South, Atlantic Coast and New England districts; Mr. Nystrom in the eleven western states, Oklahoma and Texas.

The International Harvester Co.: Opens a new motor truck district sales office in Lubbock, Tex., on March 1. The office will be located in a suite of rooms in the Stanolind Building. R. H. White, formerly motor truck district sales manager at Tulsa, Okla., has been appointed manager of the new district sales office here. He will be assisted by M. S. Howard, former assistant manager of the company's Sweetwater district sales office.

The Heil Co.: Roland Karste has been appointed district sales manager of the Detroit district office located in the Fisher Building.

DeWalt Inc.: Roy E. Heffner has been named a district sales manager covering the states of Maine, New Hampshire, Vermont, Rhode Island and Massachusetts.

Hyster Co.: Appointment of three men to fill sales positions throughout eastern United States has been announced—Jack Wright takes over as district manager in the northwestern district with headquarters in Chicago; James N. Rector moves to Atlanta as district manager of the southeast territory, and Robert Hile becomes general manager of the Hyster retail store in Chicago.

Athey Products Corp.: W. D. Lease, formerly in charge of Research and Development, has been appointed manager of sales promotion. In this newly created position, he will direct the activities of advertising, sales development and sales training.

The Lufkin Rule Co.: Has announced that in order to make its national (Continued on page 184) When they say, "it's the

MOST USED



MUST USEFUL

PIECE OF EQUIPMENT WE HAVE"

Central Construction Co., Indianola, lowa is talking about its 4-wheel-drive "PAYLOADER" tractor-shovel.

Thousands of others like them too — and so will you. See your nearby "PAYLOADER" Distributor, or write The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, III.

YOU CAN'T COMPETE IF YOUR EQUIPMENT IS OBSOLETE

T HOFE

PAYLOADER°

March 1954 — Construction METHODS and Equipment — Page 183

BLAW-KNOX

CONCRETE BUCKETS

speed work cut concrete placing costs



WHETHER you're placing fluid or dry concrete, big aggregate or normal stone, any specification-there's a size and type of Blaw-Knox Concrete Bucket to suit your needs:

Blaw-Knox Roller Gate Controllable Discharge Concrete Buckets for normal or low slump concrete for general construction work.

Blaw-Knox CAC Concrete Buckets with air operated clam gates for low slump mass concrete specifications.

Also, Tremie type buckets for placing concrete under water. See your nearest Blaw-Knox distributor for details.

> BLAW-KNOX COMPANY BLAW-KNOX EQUIPMENT DIVISION Pittsburgh 38, Pa.

BLAW-KNOX

Concrete Cutter Cuts to 61/2-in. Depths

cuts off and slits terra-cotta pipe, transit pipes and many other jobs in the same general category, according to the manufacturer. The Model TF 2-cylinder Wisconsin Heavy-Duty Air-Cooled Engine has the lugging power and stamina required for rugged service of this kind. It pays to specify
"Wisconsin Power" for your equipment, regardless of
the service application, because these rough-and-ready engines fit the job and the machine, without power waste. All Wisconsin Air-Cooled Engines run on tapered roller bearings at BOTH ends of the crankshaft - a typical heavy-duty feature. Available in a complete power range from 3 to 36 hp., in 4-cycle single cylinder, 2- and 4-cylinder models.

This Wisconsin-powered Felker unit, made by Felker Mfg. Co. Tarrance, Calif., cuts trenches in concrete and curbs, removes core

samples, scores and grooves concrete, tile, granite and marble;



WISCONS Powered





SALES AND SERVICE Continued from page 182

sales program more effective the company has established two new regional sales divisions, which, together with the New York division and West Coast division, divide the country into four sales areas. William F. Rockwell will be sales manager of the new East Central Division; D. F. Oltz, sales manager of the new West Central Division. In order better to coordinate administrative matters in the sales department, Thomas W. Wise has been made assistant to the vice-president, E. H. Meibeyer.

Euclid Div., General Motors Corp.: Announces the appointment of John A. Polhemus and Charles B. Pace as Euclid district representatives in the Middle Atlantic states. Polhemus and Pace are dividing the territory handled for 20 yr by William F. "Bill" Myer who is assisting them in their new assignments and remains with Euclid in a consulting capacity.
Polhemus will cover the northern part of the former territory, including Connecticut, western Massachusetts, northern New Jersey and eastern New York. Pace's territory includes all counties in New Jersey south of Mercer and Monmouth, all of Delaware, most of Maryland and eastern Pennsylvania.

Special Mention

Fuller Mfg. Co.: Has announced acquisition of all capital stock of the Shuler Axle Co. of Louisville, Ky. It is the intention of Fuller to continue operations of Shuler as a wholly owned subsidiary.

Baldwin-Lima-Hamilton Corp.: The Construction Equipment Division has opened an aggressive training program aimed at the distributor level. The streamlined curriculum provides an intensive one-day classroom course and a half-day factory indoctrination. Schedule includes movies, slides, chalk talks and lectures about the manufacture and sale of Lima shovels, cranes and draglines. Key personnel is participating as instructors.

LeTourneau-Westinghouse Co.: To provide modern earthmoving equipment for Brazil's expanding economy they will build a new plant in Brazil. The new plant, which will be located about 60 mi from Sao Paulo near the industrial city of Campinas, will be the property of Tratores do Brasil S.A., newly established operating subsidiary of Le-Tourneau-Westinghouse. Twenty-five acres of land are being purchased for the plant site.

Clark Equipment Co.: Announced plans to erect a new plant on the outskirts of Benton Harbor, Mich. Construction will start immediately on a 100-acre tract of land, and the plant is expected to be in operation before the end of 1954. The 145,000-sq ft building will be used as an assembly plant for a new line of tractor shovels to be produced by Clark and for the assembly of power shovels now made in the present Benton Harbor plant.

Timken Roller Bearing de Mexico: Is a new company formed to handle the sale of products manufactured by the Timken Roller Bearing Company of Canton, Ohio. Products include tapered roller bearings, removable rock bits, fine alloy steel bars and billets and seamless steel tubing. Sales offices and warehouse facilities of the new company are located in Mexico City, and A. E. Porter has been appointed manager.

Association Activities

Power Crane and Shovel Assn.: At the annual meeting held in December at The Drake Hotel in Chicago, the following officers were elected to serve for the year 1954—President, Julien R. Steelman, Koehring Co., Milwaukee, Wis.; vice-president, Walter W. Walb, Wayne Crane Div., American Steel Dredge Co., Inc., Ft. Wayne, Ind.; secretary, Herbert S. Blake, Jr., New York, N. Y.

National Concrete Masonry Assn.: M. E. Rinker of Rinker Materials Corp., West Palm Beach, Fla., has taken office as president of the association. New vice-presidents elected to serve with Rinker for the next 12 months are—R. I. Lampus, R. I. Lampus Co., Springdale, Pa.; W. R. Ireland, Birmingham Slag Co., Birmingham, Ala.; and S. Carl Smithwick, Smithwick Concrete Products, Portland, Ore. Carroll Strohm, Jr., of Nashville Breeko Block & Tile Co., Nashville, Tenn., was re-elected secretary-treasurer.

Associated Equipment Distributors: George W. Gagel, president of Machinery & Supplies Co., Kansas City, Mo., was elected 1954 president at the 35th annual meeting of A.E.D. Other officers elected include—R. J. Finn, Bode-Finn Co., Cincinnati, Ohio, executive vice-president; S. F. Laskey, Northwestern Equipment, Inc., Fargo, N. D., vice-president; L. Miner Doolen, Telford Equipment Co., Lansing, Mich., vice-president; F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass., treasurer.

National Association of Home Builders: Texas builder R. G. "Dick" Hughes was elected president at the 10th annual Convention Exposition. Nathan Manilow of Chicago was elected first vice-president for the 1954 term. Other NAHB officials elected were—2nd vice-president, Paul Burkhard, Glendale, Calif.; treasurer, V. O. Stringfellow, Seattle, Wash.; secretary, Franklin L. Burns, Denver, Colo.



20" from Trench to Wall

IN NORFOLK, VA. this Model 92 CLEVELAND "Baby Digger" shows how its useful compactness enables it to place a trench safely within 20" of a house wall. Balanced perfectly on its smooth full crawlers, the 92 maneuvers easily in even the closest quarters, with less damage to lawns, walks and driveways. Because it digs any size of trench from 10 to 20 inches wide and up to 5 feet deep, it is usable on a wide variety of jobs.



The 92 hustles safely from job to job . . . at legal limit speeds . . . because it's so easily portable on the drop-axle, tilt-bed CLEVELAND T5 Trailer.

Write for descriptive literature and specifications or get the full story on CLEVELANDS from your local distributor.



Make more profits with

WELLMAN-WILLIAMS DRAGLINE BUCKETS



THE Wellman-Williams Dragline Bucket is perfectly balanced, light in weight, has a wide digging radius and hitch connections for fast adjustment of digging depths. Alloy steels provide maximum strength with minimum dead weight. Teeth are made of manganese steel and are reversible. Perforated type dragline buckets also available.

It's a WELLMAN - built to dig and last while digging.

THE WELLMAN ENGINEERING CO.

CLEVELAND 4, OHIO

Mail	The Wellma 7028 Centr
गिवा।	Please send :
coupon	Cla
for free	Your Name.
Lullatia	Address
bulletin	City
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The Wellman Engineering 7028 Central Avenue, Cle	
Please send me a free copy o	f bulletin on: Stone Grabs
Dragline Buckets	Log Grabs
Your Name	
Address	
City	State
Desision	Company

Night School Helps Supervisors

"MANAGEMENT of Construction Activities" is the title of a course being given in night school sessions this winter at Washington University, St. Louis. The course is sponsored jointly by the University and the Associated General Contractors of St. Louis.

The curriculum was planned primarily for the job superintendent, job foreman and other contractor's supervisory personnel on the job site—to improve the quality of management on the job. Approximately 270 construction men are enrolled, and about 70% of these are field personnel. The remainder are office personnel and men from fields closely related in the construction industry.

There are 13 2-hr sessions and upon completion each student who attends at least 90% of the sessions will receive a course certificate.

The sessions cover the following subjects:

- 1. The Construction industry
- 2. Construction Equipment
- 3. Blueprints and Specifications
- 4. Estimating and Job Planning
- 5. Job Layout and Progress Schedules
- 6. Human Relations
- 7. Quality Concrete
- 8. Job Safety
- 9. Heating and Air Conditioning
- 10. Coordinating Sub-Contractors and Job Coordination
- 11. Electrical Work and Sub-Contracts
- 12. Labor Management
- What Makes a Good Job Superintendent

Each of the subjects has been assigned to a recognized authority in the field under discussion. Lectures are supplemented with motion pictures, slides and handbooks.

Distributed as a part of the course is a subscription to Construction Methods and Equipment for each student, as well as a copy of the Associated General Contractors' Safety Manual.

The curriculum was established by Prof. Robert Oswald, School of Architecture of Washington University; Prof. Raymond E. Flint, School of Civil Engineering; and Robert W. Murch, of the Murch-Jarvis Construction Co., representing the AGC of St. Louis.

Sessions were started last October and will end in March.

bigger loads

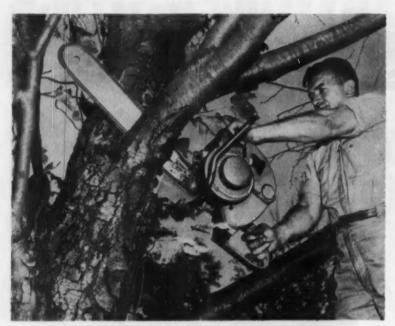
Fuller 5-F-1220 Transmission With payloads topping the 60-ton mark, modern material hauling is well-termed "the world's toughest trucking." That's why you'll find Fuller Transmissions—designed to shift easy and deliver the torque—in today's biggest off-highway trucks.



FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forgo Division, Milwookoo 1, Wis. - Western District Br.ach (Sales & Sarvice—Both Divisions), 641 E. 10th St., Oakland 6, Crl. - Shuler Aula Co., Levisville, Ky. (Subsidiary)

CONSTRUCTION EQUIPMENT NEWS



Homelite Chain Saw

This Model 17 Homelite chain saw weighs only 22 lb, yet delivers 3.5 hp. It will cut through an 18-in. tree in 18 sec. Has an automatic clutch, all-diaphragm carburetion, positive chain lubrication, quick-

starting and weather-proof ignition. Straight blades are available from 15 to 36 in.; cut bow attachments, 14 to 18 in.—Homelite Corp., 54 Riverdale Ave., Port Chester, N. Y.



Low-Priced, 3-Horsepower

Here's a low-priced, 3-hp chain saw equipped with a standard 18-in. blade, but adaptable to 16-, 20-, 26- and 30-in. blades. Powered by gas engine.—Lancaster Pump and Mfg. Co., Lancaster, Pa.



Improved Chain Saw

The Strunk model 3-19 is now the improved model P-3. It has more cutting speed and power, a positive chain tightener, and guide bars have triple life.—Strunk Equipment Co., Coatesville, Pa.



Black & Decker Saws

Among the features of the B&D's 7-, 8- and 9-in. heavy-duty saws are an exclusive saw grip handle; a king-size lever arm for retracting the lower blade guard when making pocket cuts, and improved cutting line and blade visibility. The power cable now passes out the end of the handle to eliminate work interference. Black & Decker Mfg. Co., Towson 4, Md.



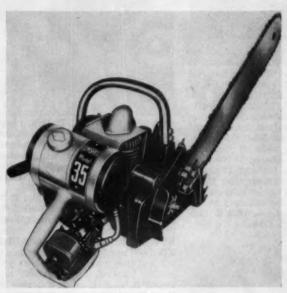
Clipper Masonry Saw

Diamond blades are now available suitable for cutting concrete block, Haydite, Waylite, pumice stone and other refractory materials. Until just recently diamond blades were recommended only for hard materials, but new metal alloy bond prevent the diamond particles from tearing away in groggy materials.—Clipper Mfg. Co., 2800 Warwick, Kansas City, Mo.

...About

According to modern dictionaries, a "saw is a cutting tool with a thin blade and a toothed edge worked mechanically or by hand." The definition doesn't quite hold true in this modern era as the saw really has come into its own the last few years. They come in all shapes—thin blades and thick

blades, chains, spiral blades—powered with air, electricity, gasoline engines, and of course, still by hand. A saw in any form is a must to a contractor. We've collected a few photos of the saws we've recently seen with the thought you'd like to take a look at them, too.—Ed.



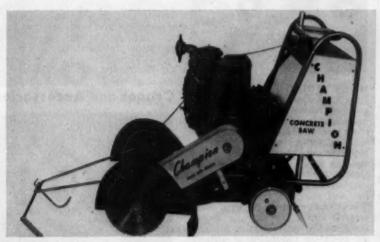
Lombard Model 35 Chain Saw

New power, new performance and up-to-the-minute streamlined efficiency and lowest price of proved design are claimed by the manufacturers of this saw. Has trigger control, direct carburetor, automatic oiler and shut-off, filter guard and chain tightener.—Lombard Chain Saws, Ashland, Mass.



Heavy-Duty Concrete Cutter

This power-driven concrete cutter uses a diamond abrasive blade which can make a cut as deep as 6½ in. when using an 18-in. blade. It's powered with a 26-hp Kohler engine which provides forward cutting travel at 3 ft per min.—The Felker Mfg. Co., Torrance, Calif.



Concrete Saw

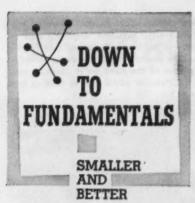
This saw is designed to cut all types of asphalt and concrete highways, streets and joints in concrete flooring, patching and trenching work. Two models are available—one with a 14.6-hp gas engine and the other with 8.4-hp gas engine.

Each blade guard has a 12-in. blade capacity. Both machines have dashboard controls, positive screw feed, depth lock, non-sway tires and instant water cut-off valves. They're easy to maneuver.—Champion Mfg. Co., St. Louis, Mo.



Keeps Saws in Condition

This Speed Jointer and Saw Set will keep circular saws in good cutting condition. Handles saws from 6 to 12 in. with ½- to %-in. centers. Blades are firmly held in place on a conical mandrel.—Speed Corp., 3420 S.W. Macadam, Portland, Ore.



KERN'S NK3 Precise Engineers' Level. The world famous engineering tool especially designed for accurate leveling.



The NK3 offers over 100 years of Swiss Master Craftsmanship and the latest technical achievements compressed into 4 lbs. of maximum precision, operational efficiency and economy.

- Mean leveling accuracy per mile (normal conditions) ± .008 Ft.
- Coincidence bubble is viewed directly through 30X telescope, allowing constant check on bubble centering while reading rod.
- Ready for use right out of the case. Highest precision leveling with coincidence spirit level and tilting screw. Coated optics give increased brilliance and contrast in the image.

MORE RELIABLE READING IN LESS TIME!

Ask for Detailed Brochure NK527

SERVICE DEPARTMENT FACTORY TRAINED PERSONNEL

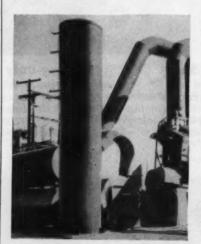


CONSTRUCTION EQUIPMENT NEWS . . . Continued

Asphalt



MIXER TIPS—Of interest to all asphalt plant owners and operators is the announcement of a new material being used for the manufacture of mixer tips called Thermalloy HC 250. The accompanying photo graphically illustrates how the new Thermalloy mixer tips can outlast conventional types of mixer tips. The middle and right-hand tips, made of Cumzite, show wear after mixing 18,000 tons. The left-hand tip, made of Thermalloy HC 250, showed wear after 42,000 tons of mixing. Further information is available for the asking from F. D. Cummer & Son Co., 1827 E. 18th St., Cleveland 14, Ohlo.



WET-WASHING SYSTEM — Constructed for the efficient and economical removal of dust normally exhausted into the atmosphere by asphalt plants is this new standard wetwashing system which can be installed on the exhaust side of any existing blower or fan and is complete with horizontal spray chambers, vertical scrubber, duct work from fan and manifold spray chambers. The amount of water required is extremely small, and the new system is claimed to meet the most stringent air pollution requirements.—Standard Steel Corp., Los Angeles, Calif.

BIG MIXING PLANT—The largest bituminous mixing plant in the Cedarapids line, which has been redesigned from the Model E type plant and now gives 50% greater capacity, is called the Model G-60. Its 65-cu ft aggregate batcher and 60-cu ft mix-



ing units permit capacities ranging from 5,000 to 6,500 lb. The plant may be operated manually or semi-automatically with full pneumatic control, or batching and control equipment may be completely automatic and controlled electronically. Additional details and specifications for the new Cedarapids Model G-60 may be obtained upon request from Iowa Mfg. Co., Cedar Rapids, Iowa

NEW ASPHALT BONDING ADDITIVE—"Pave," a new asphalt bonding additive which is not destroyed when handled, transported and stored in asphalt road materials at the normal high temperatures required, make it possible for the first time to have the advantages of a bonding additive in asphalt cement and hot mixes, according to the manufacturer. In heat stability tests, Pave in an asphalt withstood constant temperature of 350 deg F for weeks without loss of bonding effectiveness. The material's concentrated form permits using approximately half the amount of additive the industry has become accustomed to using. A laboratory sample and additional information can be obtained by writing to Carlisle Chemical Works, Inc., Reading, Ohio

Cranes and Accessories



HEAVY-DUTY LIFTING CRANE— Special heavy-duty equipment for the Bucyrus-Erie 22-B ¾-yd craneexcavator has recently been developed to widen safety factor margins (Continued on page 192)

THE ENGINEER'S REPORT

UNITS Wheel bearings - 75 trucks

OPERATION Lawling in city traffic

CONDITION Continual shock loading

The fowrie Paving Co., Inc.,

FIRM San Francisco

No wheel bearing failures on 75 trucks in 7 years!

CLEAN BRAKE LININGS and no wheel bearing failures due to lubrication in assemblies lubricated with RPM Wheel Bearing Grease. That's the 7-year maintenance record on 75 dump and pick-up trucks operated by the Lowrie Paving Co., Inc., San Francisco. Other grease tried in some wheels melted and caused loss of bearings. These trucks haul heavy loads of dirt and hot asphalt through city streets; wheel assemblies are subjected to countless shocks, are kept hot by stop-and-go driving in slow-moving traffic.





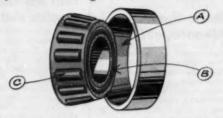
OPERATED 1125 HOURS SINCE LAST PACKING, this bearing assembly still contains plenty of clean grease. Note clean brake linings and backing plate. Even in these hot operating conditions, RPM Wheel Bearing Grease stays all through bearings, does not melt or leak out onto brakes.

REMARKS: The Lowrie Paving Co., Inc., has used Standard Oil Company of California products since 1930, has used RPM Wheel Bearing Grease since

1946. This grease is made with high quality paraffin base oils, contains no harmful fillers. It maintains correct and uniform consistency under all operating conditions, and is stable in storage. Comes in medium and heavy grades.



How RPM Wheel Bearing Grease protects bearings under all conditions



- A. Provides a tough, resilient lubrication film that protects against heavy pounding and overload pressures.
- B. Sticks tightly to all bearing surfaces ...feeds slowly and stays in smallest clearances.
- C. Resists water and extreme heat...won't melt and run off onto brake linings.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

10,000 WATTS A.C.



Check these advantages!

- ★ High capacity for big jobs. ★ Twin-cylinder, horizontally-op-posed, air-cooled, alternatefiring engine.
- Aluminum-alloy cylinder heads. * Extra-large, replaceable bear-
- * Full-pressure lubrication, 6-quart oil capacity, oil filter.
- * Impulse-coupled, high-tension magneto ignition; radio suppressed.
- * Quiet, vacuum air cooling of generator and engine.
- Excellent accessibility; snap-off
- * Extremely quiet running.
- ★ High performance generators.
- * Completely equipped with controls and instruments.

Costs less than any other complete electric plant!

You can't match it anywhere in performance, equipment or value. The sensational new Onan 10CW gives you every-thing you've wanted in an electric plant plus exceptional mobility for a unit of its

On large construction jobs, where wattage requirements for power tools are high, or where floodlighting of ex-tensive work areas is essential, the Onan 10CW delivers all the electric power

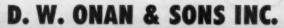
Before you buy another electric plant for any purpose, take a good look at this new low-cost powerhouse!

Model 5CW 5,000 watts

Same advanced design as the 10CW with all its exclusive advantages. Built for heavy duty, eco nomical operation



Write for Detailed Specifications!



7857 University S.E., Minneapolis 14, Minnesota

(Continued from page 190)

and to increase machine life on crane, clamshell and dragline operations. The new model, while basically the same machine as the standard model, has a long-frame crawler mounting which provides increased bearing area for improved traction, and exceptional stability and maneuverbility for fast dragline, crane and clamshell work; and a heavy-duty boom with added weight and strength to provide increased work load capacity has been added. It carries boom lengths from 35 to 70 ft with removable inserts. Available as extra equipment for booms 40 ft longer is a 16-part suspension with pendants providing slower boom hoisting or lowering for precision control.—Bucyrus-Erie South Milwaukee, Wis.



NEW CABS-The 75 Series of Gar Wood standard and heavy-duty 34yd excavators and 20-ton truck crane now have a new roomier all-weather cab. The new cab features extruded rubber-mounted windows of the same construction used in truck cabs, and they are claimed to be completely moisture- and weather-proofed. For hot weather operation, the window assembly folds back, eliminating the inconvenience, storage and breakage problems of removable windows. For additional information see your local Gar Wood construction equipment dealer or write Customer Service Department, Gar Wood Industries, Inc., Wayne, Mich.

BOOMSTOP FOR CRANES - The Rud - o - Matic Boomstop prevents booms from kinking and twisting by automatically cutting off power the moment the boom is raised too high. The entire operation is automatic, with no adjustments necessary and nothing to be turned on or off. Available in two models, Model 5,000 for small cranes up to 20-ton capacity, and Model 10,000 for cranes from 20- to 100-ton capacity. Two vacuum valves operate the Boomstop clutch and master clutch. Valves are mounted at the base of the boom and connected through T-connections to the vacuum supply tank. A vacuum pump is used on diesel-powered (Continued on page 194)

ALLIS-CHALMERS INVITES YOU TO ...

Look at your Grader Jobs

THROUGH THE EYES OF AN AD-40 OPERATOR ...



GRADING — Look at that single member frame — it really lets you see what you're doing . . . means efficient grading on any job.



SLOPING — Look how much better you see . . . how much steadier your blade is with small control rods leading out to lift cases located directly over the circle.



DITCHING — Look at the low control panel. It gives you a clear view of the blade . . . helps insure a clean, smooth ditch.



SOD STRIPPING — Look at the tapered corners on this clean, wide platform . . . how they give unequalled view of heel of ROLL-AWAY moldboard.

In addition to letting you see better, the AD-40 offers feather-touch hydraulic power steering, hydraulic brakes... and true comfort for any size operator, sitting or standing. Look!



SEAT ROLLED BACK FOR STAND-UP OPERATION.

HYDRAULIC

FOWER

Yes, the big, new AD-40 is designed for today's jobs and today's operators... brings new standards of performance to all users of motor graders... handles all grading jobs faster, better, easier. You owe it to your operators... and yourself to ask your nearby Allis-Chalmers dealer now for a demonstration and see for yourself.

ROLL-AWAY is an Allis-Chalmers trademark.

- 104 bhp. * Six speeds forward, three reverse
- 23,000 lb. (with optional calcium chloride solution in rear tires — 24,800 lb.).

ALLIS-CHALMERS

SURFACE and INTERNALY BRATION

for CONCRETE PAVING



INTERNAL TYP

Tubes vibrate deep in concrete. One unit, as shown, for each 5'-0" (maximum) of slab width. Usually attached to front of finisher.



Tube vibrates on surface. Accomplishes thorough den sification of 10" concrete slabs. One unit, as shown, for each 6'-0" (maximum) of slab width. Usually at-



JACKSON GIVES YOU BOTH!



A 25', 5-motor Tube of the internal type quickly plasticizing a tough mix on thick slab construction.



On this job, on which no spreader was used, the Paving Tube materially reduced the cost of spreading concrete.

The contractor who owns a Jackson Paving Tube can quickly switch from INTER-NAL to SURFACE vibration, or vice versa, and meet any concrete slab specifications — at a minimum of equipment investment.

Supplied with extraordinarily powerful motors, the JACKSON INTERNAL Paving Tube will thoroughly vibrate all concrete slabs as thick as 24" and as wide as 25', quickly plasticizing the very dry, harsh mixes. Attached to a standard finisher, its use materially reduces spreading labor where no spreader is used. Adapted to SURFACE vibratory operation, it will do a perfect job of vibrating any mix in depths up to 12". Powered by a Jackson Portable Power Plant mounted on parent equipment and controlled by its operator.

For better results and lowest possible costs buy a JACKSON Vibratory Paving Tube. See your Jackson distributor or write for complete details.





(Continued from page 192)

cranes; manifold pressure on gasoline-powered cranes. Vacuum chambers used for the two valve operations pull 750 lb at 5 in. of vacuum. In operation, valve No. 1 releases boom friction and stops boom travel instantly when the boom angle exceeds 85 to 88 deg. Valve No. 2 is set for 90 deg. If, through accident or carelessness, the operator two-blocks the load line and pulls the boom back, valve No. 2 instantly actuates the master clutch and the boom travel is safely stopped before damage is done.-McCaffrey - Ruddock Tagline Corp., 2131 E. 25th St., Los Angeles 58, Calif.



NEW MODEL, LOW PRICE-Thew has just added an all-new, low-priced model to its line of Lorain Moto-Cranes. Designated as Model MC-104, it is a 6-ton TL Moto-Crane, and is claimed to be the lowest priced Moto-Crane on the market today. This model marks Thew-Lorain's reentry into the small rubber-tire crane field. Fully convertible to a 3/4-yd shovel, hoe, clamshell and dragline. Outstanding feature: a com-pletely new rugged 3-axle carrier. It uses a Ford engine, Model 215, mounted at the rear of the one-piece all-welded turntable bed. Address inquiries to the Thew Shovel Co., Lorain, Ohio

In this view note the highly plastic condition of the concrete accomplished by the surface type Paving Tube towed by the spreader.

JACKSON VIBRATORS, INC LUDINGTON

An important bridge needed a new pavement



Washington Bridge at Providence, R. I., serves heavy traffic of US Route 1A, 6 and 44. Now paved with resilient Texaco Sheet Asphalt. Car track area was removed and repaved later.

Washington Bridge at Providence, R.I. is a link in one of the main routes from New York City to Boston and Cape Cod. Traffic on the bridge runs as high as 41,000 vehicles a day, with trucks and buses representing about one-fifth of the total.

Last year, the State Department of Public Works decided to remove the old granite block pavement from the bridge, together with the car tracks. Now serving this heavy traffic is a resilient, heavy-duty Texaco Asphalt pavement, constructed in three courses, with a combined thickness of $4\frac{1}{2}$ inches.

The wearing surface of the new pavement is dense, durable, skid-resistant Sheet Asphalt. Scientifically graded sand and a 60-70 penetration Texaco asphalt were plant-mixed and laid to a thickness of 1½ inches to provide this surface. Rhode Island is well acquainted with the ability of Texaco Sheet Asphalt to absorb punishing impact, as a result of the performance of this type of pavement under some of the State's heaviest traffic.

From Rhode Island to the Rockies, road builders have paved with Texaco asphalt products for over half-a-century. The first step toward insuring the uniformly high quality of these Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils is the scientific selection of the crudes from which they are refined. Throughout the refining process, these products are tested and retested to make certain they comply with the specifications in every respect.

Write for two helpful booklets on Asphalt road types.

Rhode Island replaces old granite blocks with heavy-duty Asphalt pavement



Removing old blocks and car tracks, preparatory to constructing three-course Texaco Asphalt pavement. Contractor: Narragansett Improvement Company, Providence.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19

TEXACO ASPHALT



The dust files as this large battery of wagon drills goes into action, clearing the way for S-shaped, 8500-ft The Dalles Dam, located on Columbia River, east of Portland, Oregon.



This map shows approximate location of 8500-ft The Dalles Dam on Columbia River.



Irving Rauw, owner, Westland Equipment Co., supplier of the Bethlehem hollow drill steel.

Clearing the way for The Dalles Dam on Columbia River

To further the development of the great Northwest, a gigantic new dam, called The Dalles, is taking shape near the city of that name on the Columbia River, east of Portland, Oregon. The new structure, built for navigation and power purposes, is part of the Federal Columbia River Power System of multiple-purpose dams. It is being constructed by the Portland District, Corps of Engineers, U. S. Army.

The Dalles Dam is an S-shaped structure, 115 ft above normal tailwater elevation, and 8500 ft long. Upon completion, it will impound 317,000 acre-feet of water, and the power house will produce 1,746,000 kw of ultimate power.

One of the early contracts for the huge dam was awarded to Atkinson Ostrander Company, San Francisco, Calif. It called for the construction of the concrete spillway dam, including spillway tainter gates, and excavation for the tailrace and approach channel.

One of the initial tasks facing Atkinson Ostrander was the removal of approximately 2,160,000 cu yd of Columbia River basalt, a dense, grayish-black igneous rock. The contractors drilled blast holes ranging from 18 ft to 24 ft deep, using wagon drills equipped with Bethlehem hollow drill steel, and fitted in most cases with carbide-insert bits.

As has been the case in so many of the country's important construction projects, Bethlehem Hollow Drill Steel gave good, dependable service, and was instrumental in keeping this portion of the job on schedule.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast
Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Two Grades of

CARBON . ULTRA-ALLOY (chrome moly)



NEW LIMA CRANE — Descriptive bulletins covering the recently introduced Lima Type 44 and Type 803 machines are available from the factory. The Type 44 is a 1-yd machine with a 15-ft dipper handle and a 20-ft boom. Equipped as a crane, it has a lifting capacity of 25 tons. It is available either on crawler or rubber mountings. Type 803 is a 2½-yd machine with an 18-ft dipper handle and a 24-ft, 6-in. boom. It lifts 50 tons.—Baldwin - Lima - Hamilton Corp., Lima, Ohio

NEW CRANE CARRIER-A radically new crane carrier of the one-man type, incorporating several important features new to the field and known as the CW-312, is available for all make cranes in the 20- to 25ton class. The big feature: separate power supply permitting independent travel and swing. The power plant, which is assembled on a subframe consisting of a 100-hp gasoline industrial engine, torque converter, 3-speed and reverse transmission, auxiliary transmission with emergency and/or parking brake. It is claimed any mechanic can set the crane on the carrier and install the simple control line. More complete details for specific application can be obtained from the Cook Bros. Equipment Co., Crane Carrier Div., 3334 San Fernando Rd., Los Angeles 65,

Concrete



concrete vibrator with increased power and impact and called Model ME-13, has been designed to maintain its "kick" and speed in densest of concrete. Powered by a small universal motor rated at 2 hp, but actually developing almost 2¾ hp, it operates at high speed on 110-vac current, and also on dc. Increased impact, for faster vibration and placement of concrete, is obtained with heavier off-center rotor and without excessive speed. Normal speed is 7,500 to 8,000 rpm. Additional information can be obtained from the White Mfg. Co., Elkhart, Ind.

FLEXIBLE METAL TUBING—Interlocking flexible metal tubing is now being used in prestressed construction. By application of this principle, according to the manufacturer, a structure can be built with only half the concrete and scarcely a



third of the steel required for a corresponding structure in reinforced concrete. In the actual operation, the tubing is fully elongated and cut to a length equal to the bar to allow sufficient tubing to project beyond the form in order to protect the bar threads and prevent concrete from entering the space between the bar and the tube. The bar is then inserted into the tubing, which is po-sitioned in the formwork. Concrete is poured in. After the forms are removed, the tubing is stripped back to the face of the concrete. The prestressing operation follows. Literature describing the flexible tubing may be obtained by writing to The Atlantic Metal Hose Co., Inc., 123 W. 64th St., New York, N. Y.

NEW CIRCULAR BASE—To provide additional compactness and lighter

DEPEND ON WICO MAGNETOS to keep engines working

For ignition that won't let you down, take a tip from leading manufacturers of gasoline-powered field equipment. They know how important good ignition is—so they choose Wico magnetos. For example, the Gorman-Rupp pump shown below is powered by a Wisconsin engine, many of which are equipped with Wico magnetos.

No matter how wet or hot the weather—how dirty or dusty the service—Wico magnetos keep feeding a hot spark. They're built to take tough duty, with features like one-piece cast rotors, amply-sized tungsten contacts, and weatherproof coils.

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WICO ELECTRIC CO.

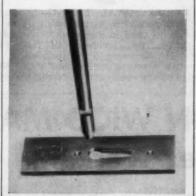
West Springfield, Massachusetts Manufacturers of Wice "Autostep" and the "Puff-A-Lise" Automobile Lightes







weight for a full-power gas-enginedriven vibrator, the Viber Co. now offers its standard gas unit with a circular pedestal base. It saves 14 lb in weight and 10 in. in over-all length compared to the standard twowheel carriage mounting. Conversion of carriage-mounted units in the field is said to be a simple matter.— Viber Co., 726 S. Flower St., Burbank, Calif.



CONCRETE FORM CLAMP-A tapered rod which can be quickly driven from the concrete, with only a light tap with a single jackhammer, is a feature of Taper-Tye Form Clamp. Formerly threaded on both ends for attaching washers, the new type utilizes a fast-assembling keyplate on the small end instead of a threaded washer. The rod is slotted on opposing sides of the small end. Keyplate is equipped with an inverted keyhole which slides over the rod and drops into the slot, locking in place. Tapered edges of the keyhole itself prevent binding in the slots upon removal. Literature describing physical characteristics of Taper-Tye is available from the manufacturer.—H. J. Krueper Co., 535 S. Clarence St., Los Angeles 33, Calif.

MATERIAL HANDLER—Recently introduced to the concrete block industry is the truck-mounted Bros Magic Muscle, a material handler that loads and unloads up to 500 lb per lift. Its safe and simple design (Continued on page 200)

HOW TO BRING YOUR DE-WATERING SYSTEM UP TO DATE!

Replace your old points with a complete set of "complete" patented fluted tube wellpoints. You will note the higher efficiency and performance of the system on your next dewatering operation. Exclusive design, removes more water in less time . . . Offer many other exclusive advantages in speed of installation, flexibility of operation, substantial cost-cutting economy. Our nearest field-service representative will be glad to show you how little such a change-over costs. Write, wire or phone our home office.

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HOW A TOUGH BUILDING PROBLEM BECAME A 30% SAVING

with Coffing Quik-Lift Electric Hoists

The Problem

J. M. Odom, Austin, Texas, building constructor, faced heavy financial loss, when unforeseen setbacks during excavation put the construction of a stone church far behind schedule.
 Stone laying could not be completed in the remaining time — by conventional methods.

The Solution

Mr. Odom mounted four Coffing Quik-Lift Electric Hoists and trolleys on an I-beam which ran the length of the wall. Limestone blocks, weighing 300 to 500 lb., came from the quarry with Lewis pin holes in their upper edges. Using a simple chain sling and Lewis pins, Odom raised and positioned the blocks with the Coffing Quik-Lifts.

The Results

Quik-Lifts eliminated the need for a material tower and A-frames. Blocks were lifted and positioned on one operation instead of two. Quik-Lifts allowed greater control in positioning since load chain was plumb at all times. Manual handling of stone was virtually eliminated. The need for unskilled labor was reduced about 50 percent. This new method cut two months off the normal stone-laying time, while over-all savings were estimated to be about 30 percent.

Wherever you see durable Coffing Quik-Lift Electric Hoists at work, you can be sure they are saving time, labor and costs. Choice of seventeen sizes with capacities up to 4,000 lb. to fit your requirements, For full information write for Bulletin D3E.

COFFING HOIST COMPANY

Hoist-Alls • Safety-Pull Ratchet Lever Hoists • Mighty-Midget Pullers • Spur-Gear Hoists • Differential Chain • Hoists • Load Binders • I-Beam Trolleys





Coffing Quik-Lift Electric Hoists were used to raise and place 500-lb. blocks of limestone. New system accounted for a 30 percent over-all saving in construction of a stone church.



permits one man to operate it by two push-buttons on the lifting column. The electrically powered

hoist travels full length of a monorail boom mounted on the truck bed behind the cab. Power source is 110v ac generator, driven by a gasoline engine. A two-prong fork on the lifting column fits easily into block cores and pallets. It fits all truck or trailer bed lengths from 12 to 27 ft. The Wm. Bros Boiler and Mfg. Co., Minneapolis 14, Minn.

Crushing

CRUSHING PLANT-A new, singleunit rock crushing and screening plant, Model 33R, designed for rapid



production of aggregates from local quarries features the Pioneer triple roll crusher which enables about two simultaneous passes at the rock. Units of the plant are large enough for quarry work and include an 18x30-in. jaw crusher, an apron feeder mounted on the plant, a 1½deck sizing and separating screen, and a 30x18-in. triple roll secondary or reduction crusher. Weight has been kept to about 71,000 lb, excluding power unit. Over-all length is 45 ft 10 in., moving height with apron removed 13 ft 6 in., moving width 9 ft 8 in. Free literature may be obtained by writing to Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis, Minn.

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the Berger Engineers' Transit. Horizontal circle has double opposite verniers reading to minutes, 30 seconds or 20 seconds; verniers are offset to line of sight and provided with reflectors. Protected vertical circle has double vernier. Graduations on Sterling Silver. Erecting-internal focusing telescope. Smoothacting leveling and tangent screws; level vials readily visible. Large bearing areas on centers and clamps. "R" type equipped with compass, yoke standard and wye bearings.

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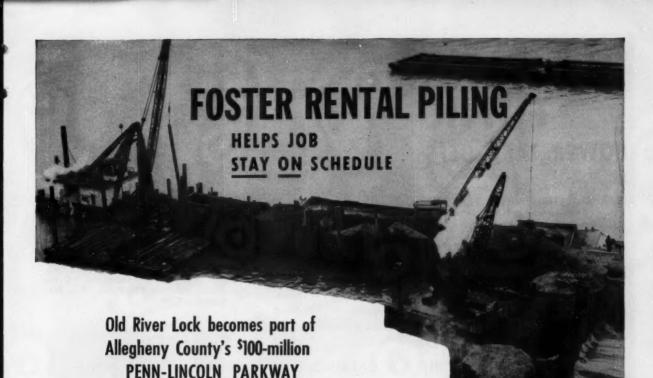


CONCRETE CORING DRILL-A portable electric drill that uses diamond coring bits for drilling holes in or extracting test cores from concrete structures has recently been announced by the Pennsylvania Drilling Co. Called the Penndrill Model "E" Drill, it is a complete drilling unit and will operate on either 115- or 230-v ac or dc current. -Pennsylvania Drilling Co., 1205 Chartiers Ave., Pittsburgh, Pa.

Engines and Accessories

ENGINES PRIMING FUEL-A new, quick-priming fuel for starting diesel and gasoline engines called Spray Starting Fluid is applied directly into the air stream of balky engines to produce instant starts in cold and damp weather. It consists of a highly volatile oil base readily ignited by com-

(Continued on page 202)



Experienced John F. Casey Company engineers had to convert the old lock on the Monongahela River to be an integral part of the new extended river wall to relocate the existing roadway and accommodate the new Penn-Lincoln Parkway. Casey engineers drove cellular cofferdams averaging 23'9" in diameter to keep water seepage to the minimum on this tremendous engineering project. Their careful planning insured an efficient, uninterrupted work schedule in constructing the river wall, and an important part of the schedule depended on Rental steelsheet Piling from Foster. Foster delivered ahead of schedule, in the exact sections (MP-112) and in the specified lengths.



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Ford Tractor Conversion Kit adapts 6 or V-8 engine, doubles power.



Special gear reduction with two shafts, one turning same speed and rotation as engine, the other anti-enginewise at optional reduction. . . . are available with over-center clutches for all engines with SAE flywheel housings. Gear reduction units feature exclusive straddle mounted pinions; special ratios and special adaptions of standard units. Wide selection of standard types, sizes and ratios stocked for immediate shipment.

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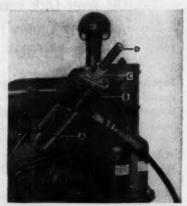
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Oldest and largest wheelbarrow maker in America



(Continued from page 200)

pression in the cylinders of the engine. Added to the fuel are several other ingredients to provide top cylinder lubrication, minimize corrosion and dilution of lubricating oil by fuel. For complete information write Spray Starting Fluid Co., Box 584, Camden I, N. J.



PRE-CUP PULLER FOR INTERNA-TIONAL—An improved design puller for removing the pre-combustion cup on all International engines is fast operating, provides a more positive grip and will pull all cups regardless of their condition. It consists of three sizes of expanding collets which grip the inside diameter of the cup, and expanding screw which tightens the collet in the cup, a puller screw "D," sleeve "A," forcing nut "C" and power-twin ram "B" when used hydraulically. The tool can also be used manually. Write the Owatonna Tool Co., 380 Cedar St., Owatonna, Minn.

FUEL FILTERS—A new filter which removes 100% of water from diesel and other fuels has a water separator and fuel filter in a combination unit mounted in series. Both filters use replaceable cartridges. A fuel filter unit eliminates dust, rust, and other solid contaminants down to 1 micron while condensing water in the fuel into large droplets. Then the clean fuel passes through a connecting nipple into the water separator unit. Water collects on the outside surface

(Continued on page 205)



A Miami, Florida contractor who has built streets for many residential developments is the owner of two Huber rollers — a winning pair.

Five years ago the company bought its first Huber 10-ton three-wheel roller. The second one was added in 1951.

The procedure used on many projects is to sprinkle and roll an 8-inch course of lime rock to a smooth, hard surface which then is swept and sealed with asphalt at the rate of 3/10

gal. per square yard. This is covered with screenings or coarse sand.

This firm's experience with Hubers is typical, for Huber rollers make friends wherever they are used. Expert design and quality construction pay off in terms of fast, powerful and dependable service. Talk to your nearest Huber Distributor about dependable Huber road machinery. You, too, will like it.

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T's TOUGH to bid against a Gradall contractor! He "has the edge" on you, simply because Gradall cuts costs on any contract, large or small.

With a single investment a Gradall contractor has a machine that does the work of several "specialized" machines, so his overhead and maintenance costs are lower.

And on any contract he gets, he keeps a Gradall busy—on many different jobs—so he doesn't lose money on idle equipment. With a Gradall he completes contracts faster.

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On operating costs alone, he can beat you, because Gradall costs very little more to operate than a truck.

But you, too, can better your bids—be more competitive—when you figure your estimates on the basis of using Gradalls.

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Gradall cuts costs on all these jobs—and many more

- Trenching and backfilling
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Here are the practical considerations you need to know to make accurate estimates on engineering projects—the understandable methods and helpful data you need for realistic, sound estimating. Each major type of construction is covered in detail not only on materials, labor, and equipment, but on overhead and profits as well. Over 100 time-saving tables help you make speedy, accurate estimates. By R. L. Peurifoy, Professor of Civil Engineering. A&M College of Texas. 350 pp., 60 illns., \$7.50



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portant facts relating to more than \$890 materials to enable you to make comparison, avoid checking many sources, and quickly get a working knowledge of the materials best suited for a particular purpose. Gives detailed information on characteristics, comparative data, sources, substitutes, adulterants, and uses for each material. Includes a section on important economic geography. By George S. Brady. 7th Edition. 879 pp., 360 illus., \$9.06.

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(Continued from page 202)

of the separator cartridge, drops into the sump and is easily removed by a drain valve. By the time the fuel reaches the outlet of the second unit. the fuel has been micronically filtered free from solid contaminants and 100% of water has been removed. It lists for around \$40 and can be quickly and easily installed on diesel engines up to 225 hp. Further information can be obtained from Fram Corp., Providence 16, R. I.

Paints

WATERPROOF ENAMEL-A new waterproof enamel for concrete surfaces is Stone-Dri made with 100% plastic rubber base. It is claimed it will stand up under the destructive chemical action of lime and alkali found in cement, stucco and masonry. It is available in silver gray, lead gray, terrace red, and patio green.—Sapolin Paints, Inc., 229 E., 42nd St., New York, N. Y.



OIL BASE MASONRY PAINT-Cindrseal, a new and improved formulation of oil base masonry paint, is claimed actually to seal all types of masonry surfaces in one-coat applications. It is a flexible coating that conforms with the normal expansion and contraction of masonry, thereby giving protection to the paint film against cracking and peeling. Special fungicidal agents have been

INDIAN DRINKING WATER & SUPPLY TANK

No. 75G



Replaces unsanitary open bucket and dipper. Completely senitary. Lusts for yeers. Chromo, push button foucet. Widely used by contractors all over United States.

The INDIAN Drinking Water & Supply Tank may be carried on the back to all points on the job. May also be used for carrying soft drinks, coffee, etc. Saves time. Improves worker \$16.00 1

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Twin Disc Industrial and Truck-Type Torque Converters (Model CF, Clutch Type, as used in Allis-Chalmers MD-20 and HD-15, shown), are available in other models for varied applications, for standard industrial gas ar diesel engines from 40 to 1,000 hp. Ask for Bulletin 135-D for over-all line; Bulletin 301 for Truck-Type Converters.

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incorporated in the formula so that there is resistance to the deteriorating action of mold, mildew and other types of fungus growth resulting from damp walls. It can be applied practically to any surface. A color card showing basic colors, samples, and descriptive literature can be had by writing to Ohio Paint and Color Co., 12416 Euclid Ave., Cleveland 6, Ohio.

Pipe



ADHESIVE FOR RUBBER GAS-KETS-A new product named Bond-Master 158C is reported to provide positive anchorage of rubber gaskets to concrete pipe, even under extreme conditions. In addition to a slow solvent evaporation rate, the new adhesive is said to permit smoother and faster trowelling in the field than has been possible with previously existing formulations for this type of work. Techincal data and prices may be obtained by writing to Rub-ber & Asbestos Corp., Dept. "P," 225 Belleville Ave., Bloomfield, N. J.

ARMORED-JOINT PIPE—"Armored Joint" identifies a new pipe which combines steel joint rings and longlasting rubber gaskets to insure against leakage or infiltration on reinforced sewer pipe. The rings embedded in the concrete pipe wall are welded to the pipe's steel reinforcement. The rubber gasket is seated in a special groove in one ring so it is confined and protected. The complete joint is said to provide ample flexibility to allow for normal contraction, expansion and deflection. It can be made to conform to any standard specification for reinforced concrete pipe.—Universal Concrete Pipe Co., Columbus, Ohio

Pumps

PUMPS-A new handy portable pump for contractors and construction use is the new Kenco 114 Portable Pump. It is completely self-(Continued on page 209)

High lift, Big load capacity, Wheeler speed charge hoppers at lower cost

Bin-batching costs drop fast when mixing plants load hoppers with high-lift, long reach, fast-moving MM Wheeler-Loader units.

Loader attachments, built specifically for 30 hp. RTI and 57 hp. UTIL Minneapolis-Moline Wheelers, reach *up* to load the highest hoppers, *out* to fill trucks, cars, conveyors.

With exclusive shuttle speeds and instant reversing, the UTIL combines high rate of travel and hydraulic pump efficiency to make each load-anddump trip in shortest possible time.

Reserve Wheeler power and greater torque at moderate rpm keeps Wheelers operating in heaviest going. For short, fast maneuvering in congested areas, Minneapolis-Moline offers heavy-duty power steering



at lower cost. For any loading job, call in your Minneapolis-Moline dealer-distributor. Let him demonstrate how you can save money by replacing expensive, less maneuverable equipment with lower-cost time-saving Minneapolis-Moline Wheeler units.



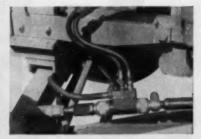
MINNEAPOLIS-MOLINE



Owner of this St. Paul, Minn., mixing plant replaced two loader outfits with this MM Wheeler-Loader unit, loads bins for less.



Wheeler maneuverability plus good bucket control speeds up surface mixing operations. Shuttle gearing spots loads in half the time.



UTIL Wheelers available with hydraulic POWERflow steering for maximum operating ease. Built-in safety features insure constant control.

Bury it! Forget it!

Yes, here's a sump pump that all you do is bury it ... forget it ... and run it for days. A dry sump cannot hurt this pump. For pumping more liquids . . . faster . . . higher ... cheaper ... use an Ingersoll-Rand Air Operated Sump Pump.

These pumps are powered by Ingersoll-Rand "Multi-Vane" air motors which have an unequaled reputation for reliability. Put these dependable sump pumps to work for you earning extra profits. They will pump as much as 250 gallons per minute and will handle heads up to 200 feet.

This Ingersoll-Rand centrifugal type sump pump is the cheapest way to move water, oil, sewage or medium sludge. It's air operated for economy. No need for a standby operator. It consumes a minimum of air. On heads of more than 40 feet air consumption is as much as 30% less than comparable units.

Write today for complete money saving information on this remarkable sump pump.





The I-R air operated sump pump is available in Sizes 25 or 35. Both types are lightweight for easy carrying by one man. They use dirt-andliquid-protected bearings for the impeller and motor rotor. All parts are made of bronze, stainless steel, or rust-proofed steel. The Size 25 can also be supplied with an all-bronze exterior when used in corrosive or inflammable liquids.



(Continued from page 206)

priming with no valves or moving parts other than the motor, pump impeller and seal. It will deliver more than 100 gpm at lowest head and is capable of forcing water to a maximum height of 100 ft. High suction lift is assured up to and including 25 ft of lift. It is powered by Briggs & Stratton 1½-hp engine and weighs only 65 lb. It is being offered by Kenco Pump Co., 1125 N. Ridge Rd., Lorain, Ohio

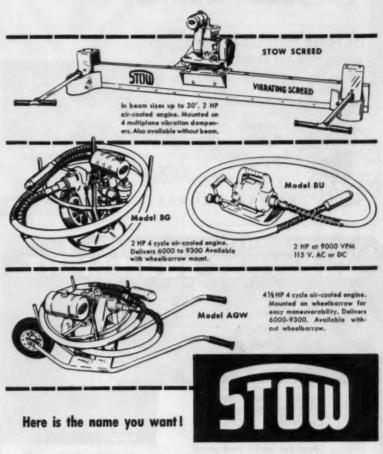
Rollers



TWO-TON ROLLER—A new two-ton roller, capable of surfacing within 1½ in. of curbing, wall, or any vertical obstruction, concentrates its weight on the main roller and provides compaction pressure of 110 lb per in. The water drum capacity is 900 lb, and the tank holds 220 lb. It is powered by a two-cylinder air-cooled Wisconsin motor 11.2 hp. The machine can be towed behind a truck which is accomplished by a hydraulic lift which raises the 36-in. 4,100-lb roller of the ground so that wheels support the roller for quick transport from job to job.—Andwall Mfg. Co., Oconomowoc, Wis.

RETRACTABLE ROLLER BY GALION—Galion variable weight 4-6-ton tandem rollers now have the advantage of easy portability from job to job made possible by including a set of hydraulically retractable

Concrete facts about Concrete Vibrators and Screeds



The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so attachments may be used directly on the vibrator shafts.

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.



STOW MANUFACTURING COMPANY

31 Shear Street Binghamton, New York



be moderngo Lightweigh



The POWER PRODUCTS Lightweight packs more power per pound

When it comes to lightweight power noth-Ing can touch this engine. Not only is it amazingly lightweight, but it has every im-

portant quality feature to assure long, dependable performance.

For portable equipment, you can't find a better engine for lightweight and dependability.

SIGHTWEIGHT MINIMUM EFFORT STARTING LONG LIFF, LESS MAINTENANCE FULL CARBURETION BALL BEARING MAIN BEARINGS

MINION SITE, LET
 LONG SITE, LET
 FULL CARBURETION
 BALL BLARING MAIN BLARINGS
 SEALED BREE PROOF CRANKCASE
 FULLY ENCLOSED, FLY-BALL GOVERNOR
 NO OIL CHANGING OR CHECKING
 NO OIL CHANGING OR CHECKING

be modern go Lightweight

OWER PRODUCTS CORPORATION GRAFTON, WISCONSIN

VERSATILITY is the keynote in MINUTES . Long Trenches 9% ft. deep HYDRO-CLAM CONVERTS TO BACKHOE SIMPLY BY Spot Excavations 8 %, ft. deep Digs Straight Down CHANGING BUCKET ROOMS Ideal for large and small operators - Municipalities and Counties.

AVAILABLE FOR MOST ALL TRACTORS—One machine...convertible to perform two types of digging! This practical feature was first requested by owners of Shawnee equipment -Now it is fulfilled. It means greater economy and increased versatility-from digging long trenches 10" to 24" wide the machine can be converted to the clam for spot excavations (36-in. minimum) in just a few minutes time.

Write for specifications and name of your dealer,

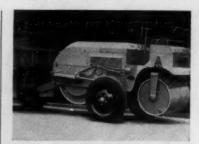


HYDRO-CLAM AS BACKHOE



HYDRO-CLAM WITH CLAM

HAWNEE Manufacturing Co., Inc. 1947-SS N. TOPEKA TOPEKA, KANSAS

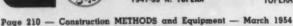


roller-bearing transport wheels. The manufacturer states that the quick and easy raising of the complete roller unit off the ground is accomplished by a simple fingertip hydraulic control. A built-in hydraulic jack in truck hitch raises compression roll, and the retractable transport wheels raise the steering roll. Both hydraulic operations are powered by an engine-driven pump. Both steering and compression rolls can be filled with water ballast to give compression ranging from 144 up to 206 lb per in. of roll width. For complete information write the Galion Iron Works & Mfg. Co., Galion, Ohio.

NEW ONE-TON ROLLER-A newly designed one-ton Motoroller having 56 lb. per sq in. compaction features a newly designed center poise hookup which insures perfect tracking of the front and rear rolls, geared steering through a split-front drum, low center of gravity for working on grades and slopes, compact frame structure with a minimum of overhang on sides for close rolling, water ballast drums to permit weight variance, dual drain plugs for speedy filling and draining, Wisconsin aircooled engine, and heavy-duty forward and reverse transmission with external adjustments.—Gabb Special Products Div., The E. Horton & Son Co., Windsor Locks, Conn.



SELF-PROPELLED, PNEUMATIC-TIRED ROLLER-Claimed to be the first self-propelled pneumatic-tired roller to be introduced to the industry is the new Tampo Model SP 9 roller. A nine-wheel roller of 72-in. solid coverage rolling width has two speeds forward and reverse and an additional two forward travel speeds. Maximum wheel load is 2,000 lb or (Continued on page 213)



How to save time on water line installation



Install Transite® Pressure Pipe with the new Ring-Tite® Coupling

Goes together fast, locks tight automatically

CONTRACTORS EVERYWHERE find that Transite Pressure Pipe and the new Ring-Tite Coupling enable them to get in and out of the trench with greater speed than ever before. Typical case histories, as illustrated, prove that important installed savings are made possible with this coupling.

The Ring-Tite Coupling is effecting installation savings everywhere because of its special features. To begin with, pipes are aligned quickly, easily. Coupling design not only provides automatic aligning but also automatic adjustment for expansion. Rubber rings are popped into grooves during assembly, lubricated pipe ends slide in under rings smoothly, easily and surely.

Pipe ends are automatically separated within the coupling. This separation gives the line flexibility to withstand shock and vibration, relieves line stresses, permits conformance to curves.



On this 12" New England installation of Ring-Tite Coupling, the contractor's bid was based on installing 400 feet per working day for the job conditions prevailing. Actual laying time averaged over 700 feet per day!



Actual experience on this New Jersey installation by a prominent water works utility established entirely new concepts of installation savings effected by the Ring-Tite Coupling. On the job shown, 600 feet of pipe were laid in 5 hours.



On this Florida installation a rate of progress as high as 640 feet an hour was achieved—exceeding by far the speed anticipated considering the job conditions.

Like Transite Pressure Pipe, the Ring-Tite Coupling sleeve is made of asbestos and cement...it is strong and durable, cannot rust, and is highly resistant to corrosion. Installations can be completed under adverse weather, temperature or terrain conditions. No complicated equipment is required.

For further information write to Johns-Manville, Box 60, New York 16, N. Y.



Johns-Manville TRANSITE PRESSURE PIPE

AN ASBESTOS-CEMENT PRODUCT

March 1954 — Construction METHODS and Equipment — Page 211

"Trouble Saver" Sectional Scaffolding at Work ...



CLOSE TO THEIR WORK, these men wield sledge hammers and pry bars to remove old cornice. Securely braced with pivoted diagonal and horizontal braces and tied-in, "Trouble Saver" Sectional Scaffold rises two feet away from the building line. 20"-wide brackets permit extension of solid platform flush with the building—allow men to work in close—keep loose stone from falling. Note how PS 6'6"-high shallow-trussed end frames provide clear headroom down the length of platform. "Trouble Saver" Scaffolding is described in free Bulletin PSS-24.

Protects Workers and Public On This 8-Story Remodeling Job

THE RIGHT SCAFFOLDING to meet all safety requirements of the workers and the public was selected before Enjay Construction Co. started remodeling work on the eight-story building that will house the new store of John M. Smyth Company, one of Chicago's old, well-known furniture firms.

A roof-high, 92-ft "Trouble Saver" Sectional Steel Scaffold, distributed by Patent Scaffolding Co., supported stable platforms at eight working levels, enabling workers to safely remove old cornices, install stone coping and add a new synthetic granite front. This "Trouble Saver" Scaffold employed 21

3-ft high frames, 21 5-ft frames and 273 6½-ft frames. A 145-ft long "Gold Medal" Sidewalk Bridge provided complete protection for pedestrians.

Project Superintendent Martin Olson pointed out that "Trouble Saver" Scaffolding cost far less than building a wooden scaffold. In addition, a wood scaffold built on the job would look clumsy and would not protect the public as well.

Whether the job is large or small Patent Scaffolding can supply the equipment you need—on a sales or rental basis. It will pay you well to remember — when it comes to scaffolding, come to PS.



CARPENTER has firm footing as he removes old window sash. By placing a plank over movable "Trouble Saver" sidewall brackets, he is able to move from main scaffold platform and stand close to the building.

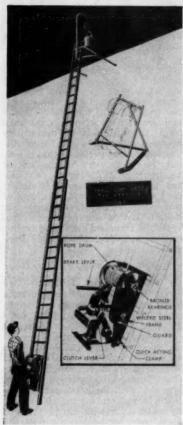
FOR GREATER SAFETY ... EFFICIENCY ... ECONOMY



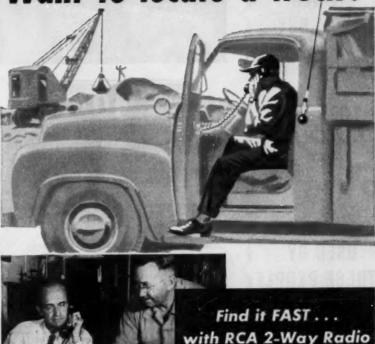
38-21 12th Street Dept. CM&E Long Island City 1, N. Y. West Coast: 6931 Stanford Ave., Los Angeles 1, Calif. Branches in all principal cities To help you solve any scaffolding problems, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds. (Continued from page 210)

250 lb per in. of rolling width. It is built either as a sand ballast or a water ballast roller. Special features of this machine include small size and extreme maneuverability for self-propelled operation in confined spaces; excellent visibility for work against curbs and buildings; equal speeds in both forward and reverse to eliminate turnarounds and to save production time; convenience of operation and maintenance; a low capital expenditure to match the economic requirement of more efficient operation. Shipping weight of the roller is 6200 lb and maximum ballasted weight is 18,000 lb.-Tampo Mfg. Co., San Antonio, Texas

Hoists



HOISTS-A low-priced, efficient ladder hoist that can be mounted on any ladder up to 40 ft, weighing only 80 lb, has been developed to help fill the needs of roofers whose operations are on one- to three-story buildings. It can handle loads up to 100 lb. The mechanism consists of a motor with a V-belt drive to a drum with a capacity of 125 ft of 1/2-in. rope. Both electric motors and gas motors are available. The load is moved up by raising the control lever and stops when this control lever is released. The brake automatically holds the load in this position. By raising the Want to locate a truck?



—says Irvin R. Worthington Burlington County (N. J.), Road Supervisor

"Our 11 trucks are on the go most of the time," says Mr. Worthington. "But with radio I can contact any of them on a moment's notice.

"We cover 500 highway miles in good weather or bad, and each truck is on call every minute of the day. In any emergency—in case of breakdowns—drivers report in by radio, and we change dispatching instructions without a minute's delay."

"To figure savings," says Mr. Worthington, "I just total the number of times we've rerouted an extra batch of concrete, eliminated cruising between jobs, gotten emergency crews out in a hurry—and I estimate we've increased our efficiency 50%."

Do it BEST with RCA 2-Way Radio. EASY TO USE as your telephone · COMPACT—takes no more space than a spare tire · TOUGH—constructed to take rough field conditions · RELIABLE—engineered by the leaders in electronics · PRACTICAL—installation and maintenance available from RCA Service Company.

Communications Division, 1 Dept. C203. Building 15-1, (Please send me information Please have a representative	on RCA 2-Way Radio	
Name	Title	
Company	Address	
City	ZoneState	
CA RADIO C	ORPORATION OF	AMERIC

WHEN YOU BUY



LOOK FOR THIS PLATE



USED BY THESE PEOPLE BARNES MANUFACTURING CO. Mansfield. Ohio

C. H. & E. MANUFACTURING CO. Milwaukee Wisconsin

CARVIR PUMP CO. Muscatine, Iowa

CHAIN SELT COMPANY Milwaukee, Wisconsin

CONSTRUCTION MACHINERY CO. Waterloo, Iowa

ISSICK MANUFACTURING CO.

Los Angeles, California

THE GORMAN-RUFF CO. Mansfield, Ohio THE JASGER MACHINE CO.

Cincinnati, Ohio

MARLOW PUMPS Ridgewood, New Jersey

FOOD MACHINIEY AND CHEMICAL CORPORATION Peerless Pump Division Los Angeles, California

RICE PUMP & MACHINE CO. Belgium, Wisconsin

STERLING MACHINERY CORP.

Los Angeles. California

WORTHINGTON CORPORATION

Concrete Machinery Division

Plainfield, New Jersey

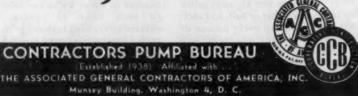
YOUR INSURANCE AGAINST

AND YOUR GUARANTY OF • EXTRAVAGANT CLAIMS

• INADEQUATE POWER

EXCESSIVE MAINTENANCE

- RATED PERFORMANCE
- QUALITY CONSTRUCTION
- LONG LIFE SERVICE

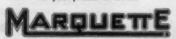


RETREAD CRAWLER-TYPE TRACTORS!



YOU BET! Use Marquette's "Tractor Strip", the easy to weld, low-cost retread that restores full pulling power to your worn grousers! No special rod or technique needed for fast, sound application. Cuts labor and "down time" to the bone! Special alloy is highly abrasion- and impact-resistant for extra long wear. Available in random-length bars of 10 to 14 feet, or cut to your specifications.

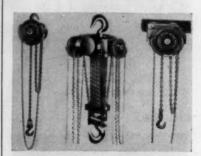
For complete information on low prices, see your jobber or write:



MANUFACTURING CO., INC.

307 E. Hennepin Avenue. Minneapolis 14. Minnesota

brake lever the load can be lowered at any speed desired. Any laborer can operate this hoist efficiently without previous experience. The hoist with electric motor sells for \$108, and with the gasoline motor drive for \$137.50. — Reimann & Georger, 252 R & G Bldg., N. Division at Ellicott, Buffalo 3, N. Y.



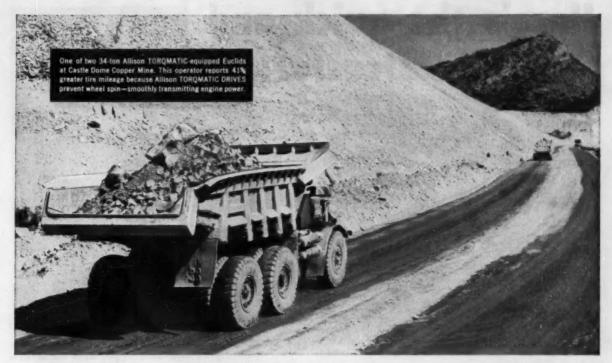
FIFTY-FIVE DIFFERENT MODELS

-Spur Gear Hoists line now includes 55 different models and sizes. according to a recent announcement by the company. Newest of the units are 15 sizes of single and multiple chain Spur Gear Hoists with capacities from ¼ to 25 tons. In the Army and Low Headroom models, the hoist is an integral part of the trolley which may be plain or geared. Advantage of this design is that it permits hoists to work where lack of headroom prohibits the use of standard units. Clevis-Connected Hoists used where speed and efficiency of conventional Spur Gear Hoists are desired but where headroom prevents the standard hoists and trolley hook-up.-Coffing Hoist Co., Danville, Ill.

25- AND 30-TON HOISTS-Two completely new arm-type hydraulic hoists for on- or off-highway application (Models 2825 and 2025), have 25- and 30-ton payload capacities and feature 70-deg dump angles assuring quick, sure clean-out, even with sticky materials and scoop-end bodies. Sandwich construction of the new three-piece hydraulic pumps provided with the hoists permit precision manufacturing for high capacity without slippage. Sturdy, rugged scoop-end rock bodies sold with the new hoist line are built to take the punishing blows of overhead loading and abrasive wear of sharp rock or ore. Information on these two new hoists can be obtained by writing Gar Wood Industries, Wayne, Mich.

Miscellaneous

MASON DEVICE—Any mason can now be assured of absolute alignment when laying brick, cement, concrete or glass blocks, glaze tile, etc., according to the manufacturers (Continued on page 217)



"41% longer tire life"

Castle Dome Copper Company reports it gets 17,000 miles per tire on off-highway trucks equipped with Allison Toromatic Drives compared to 12,000 miles per tire on mechanical-drive units. But increased tire life is only part of the story—the firm also reports the Toromatic-equipped "Eucs" have better availability and production records.

This operator runs a fleet of 12 trucks —2 Toromatic-equipped "Eucs" and 10 mechanical-drive units — hauling 390,000 tons of ore and overburden per month up 8% grades on mile-long runs. The "Eucs" average 25.3 trips per 8-hour shift, each hauling about 58,000 tons per month.

TOROMATIC DRIVES smoothly transmit engine power—help prevent wheel spin that can quickly strip the tread from a tire. There's no clutch pedal to push and only three forward gearshifts—instead of the usual 7 or 10—handle all loads and grades. The matched converter-transmission team balances engine power and load demand, absorbs harmful drive-line

shocks, prevents damage to driveline components, helps stop engine

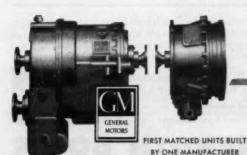
You, too, can cut your operating costs by specifying Allison TORQMATIC DRIVES the next time you buy. Ask your equipment dealer, manufacturer or write:

Allison Division of General Motors Box 894T, Indianapolis 6, Indiana

ALLISON TOROMATIC DRIVES

Unbeatable Team for Maximum Operating Economy

- Cuts driver training costs
- Quick-Shifts at full throttle with fingertip hydraulic control
- Holds power to load at all times no clutch pedal to push-no gearshift guess
- Reduces maintenance costs by absorbing shock — eliminates engine lugging — prolongs equipment life
- Only torque converter-transmission team designed to work as a unit and built by one manufacturer



Allison

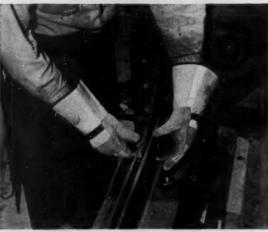
TOROMATIC DRIVES

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES . TRUCKS
TRACTORS . SCRAPERS . SHOVELS . DRILLING RIGS

Here's the quick and easy way to join structural members



The holes are aligned, using one or more drift pins. Then the worker inserts the bolt, placing hardened washer under bolt head.



Head of bolt is held lightly with fingers as second hardened washer is slipped into place over threaded portion of the bolt.



Hexagonal nut is run up on the bolt. At each joint, the initial bolt is tightened sufficiently to keep holes in alignment. Then pins are replaced with bolts.



With bolt head held by hand wrench, nut is quickly torqued with pneumatic impact wrench. That's all there is to it! The whole operation takes less than the time to describe it. No wonder this time-saving way of erecting steel with high-strength bolts is growing more popular every day!



Alternative Method—The Bethlehem High-Strength Bolt may also be installed by one man. With this method, the nut is first drawn up as far as possible with the hand wrench. Then the impact wrench is used alone.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Expart Distributor: Bethlehem Steel Expart Corporation



BETHLEHEM HIGH-STRENGTH BOLTS



(Continued from page 214)

of a new device called Mason's Twig. Made of 26-gage stainless steel in the form of a metal leaf 4 in. long, 1 in. wide at one end, tapering at the other end to a unique clip-like arrangement ¼ in. in width. Special mention is made of an ingenious slot at the clip end for holding the line. It is this slot, together with a foldedover 11/4x1/2-in. metal strip which makes Mason's Twig unusual. In use, it is simply clipped on to the stretched line so that the line falls into the slot. The twig is then placed flat down on the guide brick or block with the line paralleling the top edge of the brick. A brickbat is next placed atop the twig. Once in position, the weight of the brickbat, resting on the folded-over metal strip, holds the line firmly and securely while the slot which borders the top brick edge maintains absolute alignment at all times. The price is 25c each.-Mason's Twig Sales Co., 1629 Dierks Bldg., Kansas City 6, Mo.



SLING SADDLE-A new sling saddle or corner protector cast in corrosion-resistant bronze, light in weight and easy to install can be attached to or removed from any wire rope or braided sling in a few seconds, yet the sling saddle fits tight enough on the rope or sling to prevent its sliding to the bottom when not in use. Strand cutting around sharp 90-deg edges is eliminated. meaning longer life for the sling, as well as increased safety. They are made in three sizes to handle wire-rope slings from ½ through 1% in. They can be obtained from the Newman Mfg. and Sales Co., Inc., Box 5939, Kansas City, Mo.

T



"BY THE WAY, A. J., OUR NEW TRUCKS HAVE THE HEIL NO-SAG BODIES TOO!"

SUBFRAME construction of Heil Bodies have both cross members and long members interlocked and welded into a single assembly to prevent sagging of body floor. This reinforced steel subframe is welded integrally with the body to support the load uniformly and distribute the lifting forces of the hoist without bulging or distortion.

There's a Heil distributor near you to explain every Heil Body and Hoist advantage for your specific job, and supply you with prompt, dependable service and parts. See him today for complete details.

STRONG-ARM HOISTS

Trouble-free hydraulic holsts give you faster dumping, shorter cycle time and keep your trucks working longer with fewer repairs. Hoist frame takes all stresses without transferring any stress to truck frame.





BH-42

THE HEIL CO.

Dept. 234, 3002 W. MONTANA ST. . MILWAUKEE 1, WIS.

Factories: Milwaukee, Wis. - Hillside, N. J.

Sales Offices: New York, Union, N. J., Washington, D. C., Atlanta, Cleveland, Milwaukee, Detroit, Chicage, Kansas City, Denver, Dellas, Los Angeles, Seattle.



Here, PRIME-MOVERS handled everything!

Three Prime-Movers handled all concrete and masonry materials for this seven-story building. Each Prime-Mover hauled, spotted, and placed 15 cu. yds. of concrete per hour onto pan-forms for upp:r-floor pours! And then, with quickly interchangeable flatbeds hauled brick, tile and lumber direct to the men who used them. Write for complete on-the-job studies covering this and other projects; also for name of your nearest Prime-Mover distributor.

THE PRIME-MOVER COMPANY

MUSCATINE, IOWA





Special heavy-duty

- Transmissions
- Reduction Units
- Mechanical Drives for Torque Converters

Cotta Transmission Co., Rockford, Illinois



"Engineered-to-order".

MORE SAND FOR BIG JOBS-ON THE JOB LESS COST



WHY GAYCO GIVES HIGHER PRODUCTION

Get more uniform sand and get it faster with a GAYCO Centrifugal Separater. The ADJUSTABLE centrifugal sizing for means closer separation end less undesirable oversize—an exclusive GAYCO feature. Yes—all the sand you need, correctly sized, faster, at low cost par ton, with a GAYCO; protected by a Guarantee.

Toll us your requirements, and let us quote an the correct size GAYCO for your job.

UNIVERSAL ROAD MCHY CO.

N Y Office 117 Liberty St. New York N

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

BELT CONVEYOR CATALOG—Titled "Barber-Greene Conveyors," a new 60-p catalog shows typical conveyor layouts and installation photographs. It presents a section on shuttle conveyors, backers, and illustrates several economical stockpiling systems made possible through the use of Barber-Greene equipment. When you request this catalog, ask for 76A, and the request should be made on company letterhead.—Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

THE INSIDE STORY ON CRANES -Here is a "Trans-Vision" presentation that enables one to see inside the machines being constructed by Thew Shovel Co. One of the features of the Lorain-TL Series of power shovels and cranes is the packaged assembly of the turntable. All major assemblies, such as hoist shaft, clutch shaft, engine, etc., are completely packaged components built as integral sub-assemblies for ease of assembly, disassembly, and servicing. To show this important feature graphically was the shovel company's problem. They solved it by using an 8-p "Trans-Vision" book which consists of rotogravure printing on transparent acetate film so that the various assemblies in the machine can be superimposed on each other just as they are in the actual machine. Each page displays one packaged component of the turntable in complete detail. Collectively, the pages illustrate the entire turntable. Each unit is illustrated in a different color to make it distinct from other parts and to emphasize the unit construction. This booklet is not only interesting, but educational as well. Copies may obtained from Thew-Lorain Distributors or from The Thew Shovel Co., Lorain, Ohio

ASPHALT PLANT-A 14-p bulletin describing the Madsen Model 481 portable 4,000-lb batch capacity asphalt plant has just been released. According to the manufacturer, this plant has a faster charge-mix-discharge cycle, greater accessibility, easier maintenance, and more desirable features than can be found in any other asphalt mixing plant of its type. The unit is within legal road widths and may be readily transported by truck tractor on their own rubber tires or by truck and trailer. Ask for Bulletin No. 800 .-Madsen Iron Works, Inc., P. O. Box 578, Norwalk, Calif.

Only 22 Pounds Complete

THE NEW HOMELITE

MODEL 17

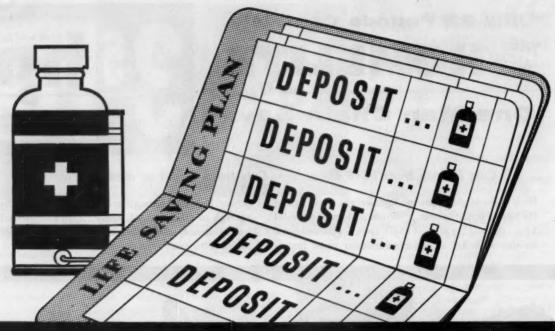
One Man Chain Saw



Cuts 18 inch trees in 18 seconds — Cuts trees 4 feet or more in diameter

Here is the highest quality, lightweight chain saw at the lowest possible cost. It's the *new* Homelite Model 17... the mighty mite of chain saws... the only saw its size with 3.5 actual dynamometer rated horsepower. Powerful enough to do the job faster... light enough to make the job easier... this new Homelite will save time, save money and cut labor and operating cost on every type of woodcutting job.





DIVIDENDS...in human lives

BUSINESS EXECUTIVES!

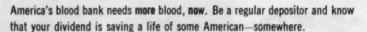
If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- HAVE YOU GIVEN YOUR EMPLOYEES TIME
- HAS YOUR COMPANY GIVEN ANY RECOG-
- DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY?
- HAVE YOU ARRANGED TO HAVE A BLOOD-
- MOBILE MAKE REGULAR VISITS?

 HAS YOUR MANAGEMENT ENDORSED THE
- LOCAL BLOOD DONOR PROGRAM?
- HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION?
- WAS THIS INFORMATION GIVEN THROUGH
 PLAN BULLETIN OR HOUSE MAGAZINE?
- HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY?
- HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS?

Remember, as long as a single pint of blood may mean the difference between life and death for any American . . . the need for blood is urgent!

NATIONAL BLOOD PROGRAM



It may be a soldier shot down in battle, suffering from shock. Or someone here at home, sick and in dire need of new blood to restore life. A mother in childbirth, or a child in an accident.

America must give. America is you. Won't you call your Red Cross, Armed Forces or Community Blood Donor Center right now, for an appointment?

GIVE BLOOD

...give it again and again

HANDBOOK OF CRANE-EXCAVA-TORS—The first printing of a pocket-size technical booklet titled "Handbook of Data for Proper Selection of Crane-Excavators" contains specific information on major design and construction fundamentals which are presented in a concise style. Comparison charts are included for added reading convenience. Copies may be obtained from the Wayne Crane Div., American Steel Dredge Co., Inc., Fort Wayne 1, Ind.

ASPHALT PLANTS—A 36-p catalog illustrating all the components of the Model 848 series Asphalt Plants features a three-color, two-page phantom view showing the inside story of operation of the entire plant from the accurately controlled aggregate feed through the mixer. Ask for Catalog 848 by writing to Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

ANVILS—A pocket-size booklet, 18 pp in all, contains illustrated data on the types, uses, designs and specifications of anvils. It explains how anvils may be made or adapted in any size, shape, or weight to meet the specific needs of industry. For a copy of this booklet write to Fisher & Norris, "Eagle" Anvil Works, Bloomsbury St., Trenton, N. J.

CLEAVER-BROOKS LITERATURE
—A 4-p bulletin Form AD-109 covering the complete line of tank-car heaters, bituminous boosters, peak-temp oil boosters, deuce-combination tank-car heaters and pumping boosters, and mobile, portable, and stationary boilers manufactured by the Cleaver-Brooks Co. is now available. Write this firm in Milwaukee, Wis.

MOVIE—Here's an 8-min, 16-mm color sound film entitled "The Loggers' Giant," that is available to organizations or companies which are interested in the logging industry. It was filmed in the Pacific Northwest and is a narrative-type travelog showing Lima machines in action, telling the story of the logging industry. If you would like to see this movie, address your request on your company or organization letterhead to the Sales Promotion Dept., Baldwin-Lima-Hamilton Corp., Lima, Ohio.

HYDRAULIC CONTROLS—Three types of Caterpillar hydraulic controls, both front- and rear-mounted available for the operation of scrapers, shovels, loaders, tool bar arrangements, are discussed in an 8-p booklet titled "Caterpillar Hydraulic Controls." Ask for Form 30794 and obtain it from any Caterpillar dealer or by writing to the Caterpillar Tractor Co., Peoria, III.



FULL DEPTH VIBRATION is a vital part of laying high strength 19 inch concrete pavement for a 15,000 foot runway at Edwards Air Force Base, California. Thorough vibration by VIBER electric paving vibrators mounted behind the spreader permits fast and accurate finishing of the harsh mix necessary to develop high strength required.

Paving vibrators speed concrete handling in longest runway

Full depth internal vibration consolidates and speeds easy finishing of low slump, high strength concrete in the 15,000 foot runway now under construction at Edwards Air Force Base, in Southern California. A battery of VIBER paving vibrators mounted behind the spreader provides thorough vibration for the full width and depth of the 19 inch thick runway, believed to be the longest ever built.

 PURPOSE OF THE VIBRATION is to produce a uniform, high strength slab which will support modern heavy bombers and withstand the searing



THREE INCH HEADS spaced across the slab thoroughly vibrate the harsh mix. Operation above 10,000 rpm assures maximum compaction and highest quality pavement. Note simplicity of respacing vibrators by loosening U-bolts and sliding along supporting pipe.

blast of jet engines. Thorough vibration also makes it easy to handle a mix so dry it can be finished without delay. This keeps length of the equipment train to a minimum and permits better supervision of working crews.

• CONTRACT FOR THE JOB was awarded to a joint venture of R. A. Westbrook, Morrison-Knudsen Company, Inc., and Ford J. Twaits Company. It calls for 411,000 cubic yards of concrete in the runway, associated taxiways, and warmup aprons. Full width, full depth vibration on the job is in accordance with specifications similar to those covering current construction or modernization of Air Force installations in Nebraska, Missouri, Louisiana, Arizona, New Jersey, and even overseas.

• VIBER paving vibrators used on all these jobs are based on an original VIBER design used successfully on airports and highways in the United States and abroad, since 1943. They are another example of the progressive design and development that keep VIBER a leader in the vibration field.

For information on the complete VIBER line of external and rubber tipped internal vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, California.

Dept. 68



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WET JOBS

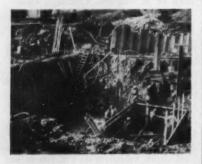
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BOTTOM UNSTABLE due to quicksand below subgrade. Photo shows collapse of steel sheet piling in this deep excavation for a Lift Station.



WELLPOINT SYSTEM—in new nearby site—solves problem perfectly as water is lowered the required 21 ft and digging speeds ahead by economical open-cut method.

THE soil mixture — clay, silt and fine sand — didn't make life any easier for the Griffin engineers, especially since subgrade, as noted, contained gravel and sand under artesian pressure. The results indicate efficiency of the planning and installation of system.

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PORTABLE ELECTRIC TOOLS—Fifty-two different portable electric tools and numerous specialize attachments for use in building and woodworking, industry and maintenance are described in a new 44-p pocket-size catalog. Designed to fit conveniently in a pocket or tool chest, this little book offers a wealth of information, including 135 photographs of electric tools and their uses. Copies are free and can be had by writing Porter-Cable, 32 Exchange St., Syracuse 8, N. Y.

PLASTER—"How to Specify and Use Perlite Plaster Aggregate" is the title of a new 8-p, two-color brochure that contains helpful specification data, information on the Perlite certification and labeling program for plaster agregate, and general hints on the cause and prevention of cracks in all types of plaster. The booklet is available from the Perlite Institute, 10 E. 40th St., New York 16, N. Y.

WATER HOSE—To assist you in the selection of the best water hose for your specific problem, this illustrated booklet contains photographs, cutaway sections of the various hoses, as well as tables of sizes, working pressures and weights. The booklet is in color and includes information on hose construction, lengths, couplings, and recommended applications. For this one write W. M. Taylor, Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Tacony and Comly Sts., Philadelphia 24, Pa.

MOVIE—Here's an 8-min, 16-mm color sound film entitled "The Loggers' Giant," that is available to organizations or companies which are interested in the logging industry. It was filmed in the Pacific Northwest and is a narrative-type travelog showing Lima machines in action, telling the story of the logging industry. If you would like to see this movie, address your request on your company or organization letterhead to the Sales Promotion Dept., Baldwin-Lima-Hamilton Corp., Lima, Ohio.

FOR REINFORCING CONCRETE-Here is a well-illustrated 24-p booklet describing the use of Steeltex for reinforcing concrete, mortar, stucco, and plaster. Examples of various applications to give strength and form to floors, roofs, ceilings and walls, both interor and exterior, in in every kind of building from private residences to skyscrapers, are described in full detail in this booklet. Also most educational are case histories of savings in construction costs and in maintenance. Copies of this booklet are free and are available from Pittsburgh Steel Products Co., Rm. 1404, Grant Bldg. Pittsburgh, Pa.



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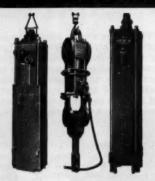
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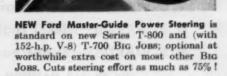
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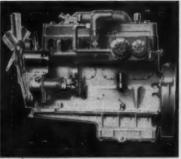


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PAVING BREAKERS-A 12-p bulletin listing the complete line of tools and accessories for paving breakers has just been released by Ingersoll-Rand. Also included is a page containing specific instructions for reforging and rehardening oil points, chisels, wedge points, etc. For your copy of this bulletin write to Ingersoll-Rand, RD, 11 Broadway, New York 4, N. Y.

CONSTRUCTION MINING—"Power and Profit in Construction Mining" tells the story of how Caterpillar rates its diesel engines and electric sets. It's an 8-p booklet and contains photos of Cat engines and electric sets on many jobs in different parts of the country. Copies of this booklet, Form D309, may be obtained in English, Spanish, French and Portuguese from any Caterpillar dealer or by writing directly to Caterpillar Tractor Co., Peoria, Ill.

MOVIES-Ulrich Products Corp. has just released two movies-one on the Domor Road Widener and the other on the Domor Elevating Grader. The road widener movie is a 71/2-min run and the elevating grader takes 101/2 min to tell its story. Both of these films can be seen through your local Caterpillar-Domor dealer or by writing directly to the Ulrich Products Corp., Roanoke, Ill.

TUNNEL AND MINE EQUIPMENT -A new bulletin which pictures and describes mine shaft equipment may be obtained free by writing to the Mayo Tunnel & Mine Equipment Co., 560 S. Prince St., Lancaster, Pa.

STEEL SCAFFOLDING-A new, two-color bulletin describing the Waco all-steel Shore, a rapid adjustment collar, trade-named Speedset, is described in the lotest material released by this company. For additional literature and information on this equipment, write Waco Mfg. Co., Dept KP, 3565 Wooddale Ave., Minneapolis 16, Minn.

THEW SHOVEL BULLETIN - A bulletin which covers the crawlermounted power shovels and cranes in the 1-yd Lorain "50" Series has just been published. It features design and construction and gives operating views of the "50" line on various applications throughout the country.-Thew Shovel Co., Lorain,

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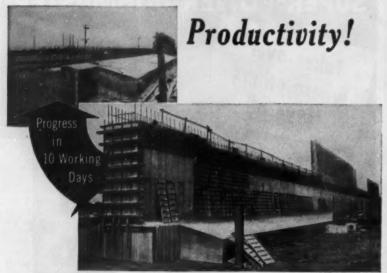
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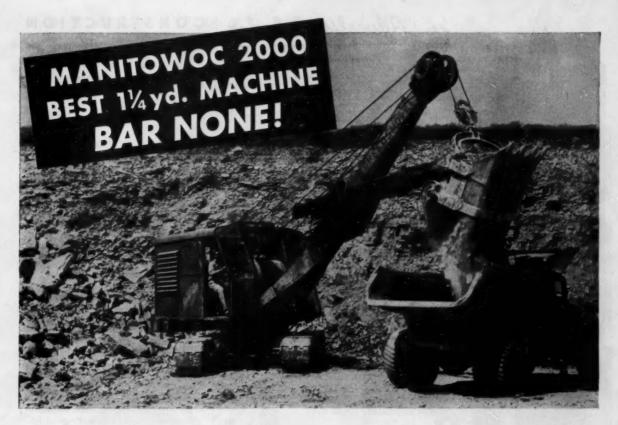
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SEARCHLIGHT SECTION

EMPLOYMENT: BUSINESS:

Equipment

(Used or surplus New)

"OPPORTUNITIES"

EQUIPMENT USED OR RESALE

UNDISPLAYED

DISPLAYED

1.50 per line, minimum 3 lines. To figure advan-payment count 5 average words as a line. Discour of 10% if full payment is made in advance for consecutive insertions.

Pesitions Wanted undisplayed advertising rate is one-half of above rate payable in advance,

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Individual Spaces with border rules for prominent display of advertisement. The advertising rate is \$15.75 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request. An advertising inch is measured % vertically en one column, 2 column—30 inches—to a page. Sens New Advertisements to New York office, 330 W. 42 St. N.Y. 36, N.Y. for April Issue closing March 18th.

ENGINEERS-FOREMEN-OFFICE MEN Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details GEO. E. DEATHERAGE & SON

CONSTRUCTION CONSULTANTS 411 So. 5th Ave., Lake Worth, Florida

AVAILABLE

DESIGN of PRODUCT used universally in Construction Industry. Basically steel plate construction in small lots.

80-1522. Construction Methods & Equipment 520 N. Michigan Ave., Chicago II, III.

STEEL

Get the exact lengths and sections you need from Foster-all standard makes, delivered on time-and at Foster's standard low rental rates. Also Rental Pile

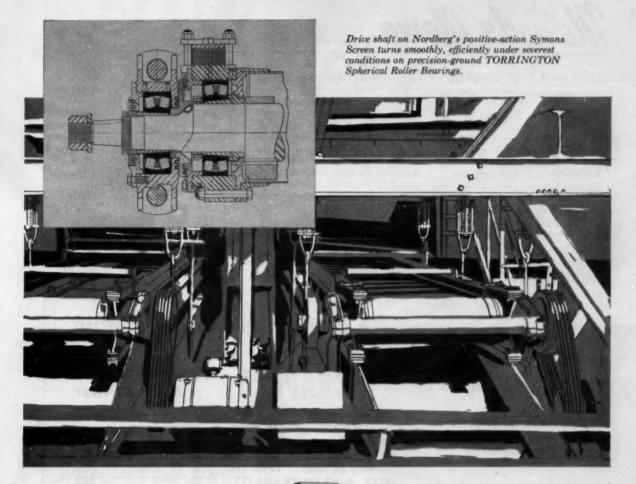
IIB KOSTER co PITTSBURGH 30 - NEW YORK 7 - CHICARO 4 HOUSTON 2 - LOS ANGELES 5

NEW & USED PIPE . PILING

DRAINAGE CULVERTS REINFORCING ROAD MESH

STRUCTURAL SHAPES

COLUMBUS STEEL SUPPLY CO. Columbus 3, Ohio University 1175



Only the best

Bearing applications in the rock processing industry are about as tough as they come. That's why you find so many screens and crushers, mills and pulverizers equipped with TORRINGTON Spherical Roller Bearings.

Torrington Spherical Roller Bearings have the special features that make the difference: Accurate geometrical conformity between races and rollers—for maximum capacity at all times. Self-alignment—for free-rolling service even under eccentric loading. Contact surfaces precision

pass these tests!

ground from highest top-quality steels—for minimum friction, maximum life. Thorough heat treating—for uniform hardness of all load-bearing parts. One piece, solid bronze cage for each path of rollers—for freedom of operation.

Torrington Spherical Roller Bearings are available from stock with either straight or tapered bore. Try them in your own processing equipment—see for yourself that it pays!

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON

SPHERICAL ROLLER

BEARINGS

Spherical Roller . Tapered Roller . Cylindrical Roller . Needle . Ball . Needle Roller

Methods Memo . . .

TWO-SHIFT PAVING OPERATIONS for highway contractors are advocated by Theodore B. Appel, Jr., chief engineer of the C. S. Johnson Co., in the article beginning on page 121. Since motorists are affected directly by paving work, Appel believes there seems to be even more reason for two shifts on highway jobs than on other construction.

We have heard of scattered instances of night paving operations. Will you contractors who have tried it do us a favor? Send us a letter detailing your experience—good and bad—on night highway work and we will publish your comments with full credit to the writer.

HOW TO IMPROVE contractor-labor relations is very much on the minds of everyone in the construction industry. In this issue readers will find the third and final article on this subject, handled so ably by our Labor Editor, Lee Kromer. Unusual reader interest has been expressed in this series. We are reprinting the complete series, and copies are available. Write to the Editor.

THE CANADIAN CONFERENCE on prestressed concrete held at Toronto in the latter days of January, produced an excellent set of papers and talks on the subject. As might be expected, there was a large turnout (450 enrolled), and lively discussions developed. All this material, fully illustrated, too, is available in handy book form for \$2.50. Write to The Director, University Extension, University of Toronto. Payment (at par) must accompany orders.

VETERAN MACK TRUCKS keep right on rolling on highway work for George M. Brewster & Sons, Bogota, N. J. The Brewster firm held extensive contracts several years ago during construction of the popular New Jersey Turnpike. Now it is constructing several sections of the Garden State Parkway in the same state-again using 22 of the veteran 14-yd Mack dumpers. All have run more than 100,000 mi under rough service. There is a good reason for such fine performance, in addition to sound construction of the trucks: Periodic, thorough maintenance, with complete records kept on each vehicle.

AT THE COMBINED Sand and Gravel and Ready-Mix Show at the Conrad Hilton Hotel in Chicago last month, Chain Belt Company of Milwaukee came up with a fine time-saving idea.

They linked up a Motorola two-way portable radio from a truck-mixer cab in their hotel exhibit hall display to an auxiliary display in a parking lot across the street and to their entertainment and conference room high up in the hotel. This ingenious arrangement permitted the sales and executive force attending the show to keep in touch with each other, and expedited handling of visitors.

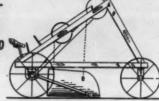
WE AGREE with reader M. E. Flynn of Denver who makes an important point in connection with our description of the Caterpillar Tractor Co. safety film, "The Gamblers," in the February issue. Flynn points out that, although the operator shown is checking a tree for dead limbs before knocking it down with a bulldozer, there still should be a stout cab over his head for this kind of work. Many times when a tree gets a stiff shove from a blade or clearing bar the top third breaks off and comes rattling down.

CAN YOU BEAT THIS? At the recent annual convention of the Associated General Contractors of Missouri 20 members received certificates for working 12 months without a lost-time accident on any of their jobs.

As It Was in the Beginning

SCRAPERS - from Mule Power ... to Horse Power

EARLIEST RECORDED "CARRYING-TYPE"SCRAPER WAS PATENTED IN 1904. THIS RIG HAD NOTHING TO HOLD DIRT IN WHEN LOADED AND DUMPED BY GRAVITY THRU THE REAR . MULE POWER WAS ITS BEST PRIME MOVER.





EARLY LATOURHEAU FINE BUCKET SCRAPER

R.G.LeTOURNEAU ACHIEVED INCREASED CAPACITIES WITH HIS EARLY SCRAPER BY AS MUCH AS 6 CU.YDS. ELECTRIC CONTROLS USED ON HIS FIRST SELF PROPELLED SCRAPER, IN 1923, WERE -25 YEARS AHEAD OF THEIR TIME.

DIRT BEGAN TO BE MOVED ON A BIG PRODUCTION BASIS WHEN RUBBER TIRES AND SPEED WERE ADDED TO THE SCRAPER. THE TWO WHEEL PRIME MOVER, LIKE THIS WAS ONE OF THE MOST IMPORTANT ADVANCEMENTS. LATEST MODEL DIRTMOVERS ARE PUSH BUTTON ELECTRIC-CONTROLLED POWERED BY DIESEL AND BUTANE ENGINES CAPABLE OF PRODUCING OVER 400 HORSE POWER.





world's heaviest prestressed girders here...



POZZOLITH* an aid in meeting concrete requirements

This project represents the successful solution of many engineering problems. One was to produce concrete of the required strength and workability with *low unit water content...*to obtain quality and economy.

As in the case of many other structures built during the last 20 years, builders found that Pozzolith enabled them to produce a mix with the least amount of water. Result—better quality concrete plus a savings.

By reducing water, Pozzolith provides these well known benefits of low unit water content—reduced bleeding and segregation, minimized shrinkage, low permeability, increased bond-to-steel and improved durability. Full information on request.

*POZZOLITH...the cement-dispersing, water-reducing agent which makes available the optimum amount of air in concrete and fully complies with the water-cement ratio law. Added to the mix at the mixer. Pozzolith was developed by The Master Builders Co. in 1932.





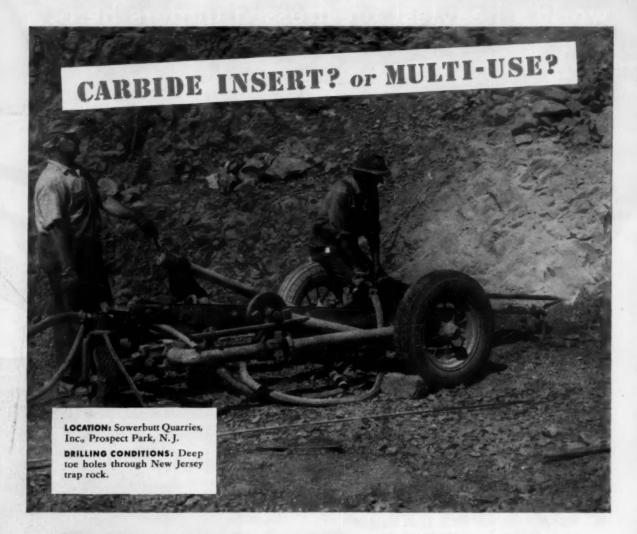




BUILDERS



Subsidiary of American-Marietta Company



TIMKEN° carbide insert bits drill 31-foot holes in trap rock with only 1 change of bit sizes

THE experience of the Sowerbutt Quarries, Inc., shows how Timken® carbide insert bits can cut drilling costs on extra-deep constant-gage holes, especially in hard, abrasive ground, where high speed is desired.

Switching to Timken carbide insert bits brought Sowerbutt Quarries greater production at lower overall drilling costs. But these bits are *not* the best bet for every drilling problem.

For ordinary ground, Timken multi-use bits are most economical. With correct, controlled reconditioning, they'll save you money wherever full increments of steel can be drilled.

Whichever type of Timken bit you use on a job, you won't have to buy new steels just because you have different drilling conditions on the next job.

There are many types of Timken rock bits that are all interchangeable on the same drill steel. You can quickly switch from one type to another in the same thread series, right on the job!

With Timken rock bits you get the added benefits of:

1) the Timken Company's own electric furnace fine alloy steel, 2) special shoulder unions that protect threads from drilling impact. For help in selecting the best type of bits for a job, write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken threaded multi-use rock bit



Timken threaded

your best bet for the best bit ...for every job

